EAST Search History

	,		T	T		
Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	8	("5160712" "5264201" "5370948" " 5393622" "5629110" "5985237" "64 16902" "6660432").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 16:48
L2	1	L1 and (primary adj particle same secondary adj particle)	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 16:47
S2	8	("5160712" "5264201" "5370948" " 5393622" "5629110" "5985237" "64 16902" "6660432").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2006/05/11 16:03
S3	1	10/629815	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 13:14
S4	1	S3 and twin\$4	US-PGPUB; USPAT; USOCR	OR	ON	2006/05/19 17:46
S6	1	10/629815	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 13:14
S7	1	S6 and quench\$3	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 13:52
S8	6	(("2003082452") or ("6660432") or ("6368749") or ("6165647") or ("6333128") or ("5993998") or ("5795558")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/08/29 13:54
S9	6	(("2003082452") or ("2005260496") or ("6660432") or ("6368749") or ("6165647") or ("6333128") or ("5993998") or ("5795558")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/08/29 14:01
S10	5078	429/209-231.3.ccls. and @ad<"20020805"	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 13:58
S11	1842	429/220,223,224.ccls. and @ad<"20020805"	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 13:58
S12	29	S11 and twin\$3	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 13:59
S13	2	S11 and (superlattice super adj lattice)	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 14:00
S14	2	S10 and r3-m	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/29 16:46

file reg COST IN U.S. DOLLARS

FULL ESTIMATED COST

SINCE FILE TOTAL ENTRY SESSION 0.21 0.21

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http://www.cas.org/ONLINE/UG/regprops.html

=> s (0.95-1.05)/Li and (0-0.3)/Co and (0.4-0.6)/Ni and (0.4-0.6)/Mn and 2/0
101958 (0.95-1.05)/LI
12295 (0-0.3)/CO
5307 (0.4-0.6)/NI
5209 (0.4-0.6)/MN
5786511 2/0

L1 137 (0.95-1.05)/LI AND (0-0.3)/CO AND (0.4-0.6)/NI AND (0.4-0.6)/MN AND 2/O

=> file caplus COST IN U.S. DOLLARS

COST IN U.S. DOLLARS SINCE FILE TOTAL ENTRY SESSION FULL ESTIMATED COST 26.44 26.65

FILE 'CAPLUS' ENTERED AT 13:36:20 ON 29 AUG 2006 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT. PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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FILE COVERS 1907 - 29 Aug 2006 VOL 145 ISS 10 FILE LAST UPDATED: 28 Aug 2006 (20060828/ED)

Effective October 17, 2005, revised CAS Information Use Policies apply. They are available for your review at:

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http://www.cas.org/infopolicy.html
=> s 11
L2
           134 L1
=> s l1 and battery
           134 L1
        125298 BATTERY
         98632 BATTERIES
        136191 BATTERY
                 (BATTERY OR BATTERIES)
L3
           133 L1 AND BATTERY
=> d 13 1-133 ibib kwic
    ANSWER 1 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2006:760223 CAPLUS
TITLE:
                         Secondary nonaqueous electrolyte batteries
                         containing lithium mixed oxide and secondary oxide in
                         cathode active mass
                         Yamada, Masayuki; Uchitomi, Kazutaka; Ueda, Atsushi;
INVENTOR(S):
                         Kawai, Tetsuo; Hashimoto, Hiroshi
PATENT ASSIGNEE(S):
                         Hitachi Maxell Ltd., Japan
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 19 pp.
                         CODEN: JKXXAF
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
                         1
PATENT INFORMATION:
     PATENT NO.
                        KIND
                                DATE
                                          APPLICATION NO.
                                                                  DATE
                                            _____
     _____
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                                                                   -----
     JP 2006202702
                         A2
                                20060803
                                            JP 2005-15935
                                                                   20050124
PRIORITY APPLN. INFO.:
                                            JP 2005-15935
                                                                   20050124
     Secondary nonaqueous electrolyte batteries containing lithium
    mixed oxide and secondary oxide in cathode active mass
    The disclosed batteries have cathode active mass containing (1)
AB
     Li (1+\delta) MnxNiyCo (1-x-y) O2 (-0.15 < \delta < 0.15; 0.1 < x \le
     0.5; 0.5 < x + y \le 1.0) and (2) oxide containing M (M = Ti, Zr, Nb, Mo,
    W, Al, Si, Ga, Ge, and/or Sn), preferably having a composition represented by
     Li2MO. The batteries have high capacity, safety, excellent
     high-voltage cycling performance, and storage stability.
ST
    nonaq electrolyte battery cathode active mass capacity safety;
    battery cathode lithium manganese nickel cobalt oxide
IT
    Battery cathodes
        (nonaq. electrolyte batteries containing Li-Mn-Ni-Co oxide and
        secondary oxide in cathode active mass for high capacity and safety)
IT
     10102-24-6, lithium silicon oxide (Li2SiO3)
                                                 12031-82-2, Lithium titanium
     oxide (Li2TiO3)
                      12031-83-3, lithium zirconium oxide (Li2ZrO3)
     12057-23-7, Lithium molybdenum oxide (Li2MoO3)
                                                    12188-25-9, Lithium tin
     oxide (Li2SnO3) 12315-28-5, Germanium lithium oxide (GeLi2O3)
     86291-88-5, Lithium tungsten oxide (Li2WO3)
                                                  212324-48-6, Lithium niobium
     oxide (Li2NbO3)
                      904299-06-5
                                   904299-07-6 904299-09-8
                  904299-14-5
     904299-11-2
     RL: DEV (Device component use); USES (Uses)
        (nonaq. electrolyte batteries containing Li-Mn-Ni-Co oxide and
        secondary oxide in cathode active mass for high capacity and safety)
    ANSWER 2 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                         2006:759963 CAPLUS
TITLE:
                         Cathode active mass, its manufacture, and
                         nonaqueous-electrolyte battery
INVENTOR(S):
                         Nakagawa, Hiroe; Nukuta, Toshiyuki; Inamasu, Tokuo;
                         Endo, Daisuke
PATENT ASSIGNEE(S):
                        GS Yuasa Corp., Japan
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 13 pp.
```

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006202678	A2	20060803	JP 2005-15382	20050124
PRIORITY APPLN. INFO.:			JP 2005-15382	20050124

TI Cathode active mass, its manufacture, and nonaqueous-electrolyte battery

AB The cathode active mass is manufactured by fluorination of a Li mixed oxide LixNiaMnbCocOz (0 < x \leq 1.3; 0 < a < 1; 0 < b < 0.6; 0 < c < 1; a + b + c = 1; and z = 1.7-2.3) having α -NaFeO2-layered structure. The battery provides high discharge capacity and long cycle life after high-temperature storage.

ST cathode lithium nickel manganese cobalt oxide fluorination battery

IT Battery cathodes

Fluorination

(fluorination of lithium mixed oxide cathode for nonaq.-electrolyte battery)

IT Secondary batteries

(lithium; fluorination of lithium mixed oxide cathode for nonag.-electrolyte battery)

IT 7782-41-4, Fluorine

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(fluorination by; fluorination of lithium mixed oxide cathode for nonag.-electrolyte battery)

IT 390362-01-3DP, Cobalt lithium manganese nickel oxide (Co0.5LiMn0.25Ni0.25O2), fluorinated 532934-38-6DP, Cobalt lithium manganese nickel oxide (Co0.34LiMn0.33Ni0.33O2), fluorinated 532934-40-0DP, Cobalt lithium manganese nickel oxide (Co0.16LiMn0.42Ni0.42O2), fluorinated 763122-46-9DP, Cobalt lithium manganese nickel oxide (Co0.84LiMn0.08Ni0.08O2), fluorinated 904297-35-4DP, fluorinated

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(fluorination of lithium mixed oxide cathode for nonaq.-electrolyte battery)

L3 ANSWER 3 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:759813 CAPLUS

TITLE: Secondary nonaqueous electrolyte batteries

containing lithium manganese nickel cobalt mixed oxide

cathode active mass particles

INVENTOR(S): Yamada, Masayuki; Uchitomi, Kazutaka; Ueda, Atsushi;

Kawai, Tetsuo; Hashimoto, Hiroshi

PATENT ASSIGNEE(S): Hitachi Maxell Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006202647	A2	20060803	JP 2005-14483	20050121
PRIORITY APPLN. INFO.:			JP 2005-14483	20050121

TI Secondary nonaqueous electrolyte batteries containing lithium manganese nickel cobalt mixed oxide cathode active mass particles

AB The disclosed batteries contain cathode active mass particles with a composition represented by Li(1+ δ)MnxNiyCo(1-x-y-z)MzO2 [M = Ti, Zr, Nb, Mo, W, Al, Si, Ga, Ge Sn; -0.15 < δ < 0.15; 0.1 < x \leq

```
and the atomic ratio of M to Mn, Ni, and Co in the particle surface (a) is
     higher than the average atomic ratio of M to Mn, Ni, and Co in the whole particle
     [z/(1-z)]. The batteries have high capacity, safety, excellent
     high-voltage cycling performance, and storage stability.
     nonaq electrolyte battery cathode active mass particle;
ST
     battery cathode lithium manganese nickel cobalt mixed oxide
     particle
IT
     Battery cathodes
        (nonaq. electrolyte batteries containing Li-Mn-Ni-Co-M oxide
        cathode active mass particles with composition distribution for high
        capacity and safety)
IT
     904301-28-6
                   904301-30-0
                                 904301-32-2
                                               904301-34-4
                                                             904301-36-6
     904301-38-8 904301-39-9 904301-40-2
     904301-41-3 904301-42-4 904301-43-5
     904301-44-6 904301-45-7 904301-46-8
     904301-47-9 904301-48-0
     RL: DEV (Device component use); USES (Uses)
        (nonaq. electrolyte batteries containing Li-Mn-Ni-Co-M oxide
        cathode active mass particles with composition distribution for high
        capacity and safety)
     ANSWER 4 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2006:699896 CAPLUS
DOCUMENT NUMBER:
                         145:149098
TITLE:
                         Secondary nonaqueous electrolyte battery
INVENTOR(S):
                         Muraoka, Yoshiyuki; Nakashima, Takuya; Kozuki, Kiyomi;
                         Nagayama, Masatoshi
PATENT ASSIGNEE(S):
                         Matsushita Electric Industrial Co., Ltd., Japan
SOURCE:
                         PCT Int. Appl., 21 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
     PATENT NO.
                        KIND
                                DATE
                                          APPLICATION NO.
                                                                  DATE
     ______
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                                _____
                                            -----
     WO 2006075684
                         A1
                                20060720
                                           WO 2006-JP300343
                                                                  20060113
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ,
             LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, M2,
             NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
             SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
             YU, ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,
             CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,
             GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM
     JP 2006222072
                         A2
                                20060824
                                            JP 2005-377954
                                                                   20051228
PRIORITY APPLN. INFO.:
                                            JP 2005-7401
                                                               A 20050114
                                                               A 20051228
                                            JP 2005-377954
REFERENCE COUNT:
                               THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS
                         34
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
TI
     Secondary nonaqueous electrolyte battery
AΒ
     The battery has a cathode containing a Li-intercalating composite
     oxide active mass, a Li-intercalating anode, a separator between the 2
     electrodes, and an electrolyte solution containing a nonag. solvent; where the
     discharge curve at constant-output discharging of the battery has
     ≥2 step-form inflexion points in a region ranging from 5% to 20% of
     a discharge capacity at a discharging terminal obtained during a period
    between a discharging start voltage in a fully charged state and a
     discharging end voltage.
ST
     secondary battery structure large current discharge
```

0.5; $0.6 < x + y + z \le 1.0$; 0.9 < x/y < 1.1; $0 < z \le 0.1$],

```
TΤ
     Secondary batteries
        (structure of secondary batteries for large current
        discharge)
ΙT
     12162-79-7, Lithium manganese oxide (LiMnO2)
                                                   160151-72-4, Cobalt lithium
     oxide (CoLi0.9502)
     RL: DEV (Device component use); USES (Uses)
        (structure of secondary batteries for large current
        discharge)
     474082-23-0, Aluminum cobalt lithium nickel oxide
ΙT
     (Al0.05Co0.15Li0.95Ni0.802) 899217-29-9, Cobalt lithium manganese nickel
     oxide (Co0.3Li0.95Mn0.35Ni0.35O2) 899217-30-2, Cobalt lithium
    manganese nickel oxide (Co0.2Li0.95Mn0.4Ni0.4O2)
                                                       899217-31-3, Aluminum
     cobalt lithium nickel oxide (Al0.15Co0.3Li0.95Ni0.5502)
     RL: MOA (Modifier or additive use); USES (Uses)
        (structure of secondary batteries for large current
        discharge)
    ANSWER 5 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                        2006:632965 CAPLUS
DOCUMENT NUMBER:
                        145:106782
TITLE:
                        Lithium secondary batteries, their cathodes,
                         double oxide powders therefor, and manufacture of the
                         same
INVENTOR(S):
                        Shizuka, Kenji; Okahara, Kenji
PATENT ASSIGNEE(S):
                        Mitsubishi Chemical Corp., Japan
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 27 pp.
                        CODEN: JKXXAF
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
                   KIND DATE APPLICATION NO.
    PATENT NO.
                                                                 DATE
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                               _____
                                          -----
                                                                 _____
    JP 2006172753
                        A2
                               20060629 JP 2004-360142
                                                                20041213
PRIORITY APPLN. INFO.:
                                           JP 2004-360142
                                                                 20041213
    Lithium secondary batteries, their cathodes, double oxide
    powders therefor, and manufacture of the same
AB
    Powders of Li1+zNixMnyCo1-x-yO2 (0.20 \leq x \leq 0.55; 0.20
    \leq y \leq 0.60; 0.50 \leq x + y \leq 1; 0.02 \leq z
    \leq 0.55) and S content 0.06-0.35%, are manufactured by the following
    steps; pulverizing Ni compds., Mn compds., sulfates, and optionally Co
    compds. in liquid media to average diameter \leq 0.3~\mu m, slurrying, atomizing
    by spraying to allow primary particles to aggregate, mixing the resulting
    secondary particles with Li compds., and firing the mixts. in O-containing
    gases. Li secondary batteries having the powders as cathode
    active mass which suppresses rise in pH and avoids gas emission.
ST
    lithium secondary battery cathode double oxide manuf; sulfur
    content lithium nickel manganese oxide battery cathode; pH rise
    suppressed double oxide battery cathode
IT
    Secondary batteries
        (lithium; manufacture of lithium nickel manganese oxide powders of
       prpescribed S content for Li secondary batteries)
IT
    Battery cathodes
        (manufacture of lithium nickel manganese oxide powders of prpescribed S
        content for Li secondary batteries)
ΙT
    7704-34-9, Sulfur, uses
    RL: DEV (Device component use); MOA (Modifier or additive use); USES
    (Uses)
        (cathode active mass containing; manufacture of lithium nickel manganese oxide
       powders of prpescribed S content for Li secondary batteries)
    868658-11-1P, Cobalt lithium manganese nickel oxide
    (Co0.34Li1.09Mn0.33Ni0.33O2)
                                   895149-47-0P, Cobalt lithium manganese
    nickel oxide (Co0.34Li1.06Mn0.33Ni0.3202)
                                                895149-50-5P, Cobalt lithium
    manganese nickel oxide (Co0.35Li1.06Mn0.32Ni0.33O2) 895149-52-7P
    , Cobalt lithium manganese nickel oxide (CoO-0.6Lil.02-1.55Mn0.2-0.6Ni0.2-
```

0.5502)

RL: DEV (Device component use); IMF (Industrial manufacture); PREP

(Preparation); USES (Uses)

(cathode active mass; manufacture of lithium nickel manganese oxide powders of prpescribed S content for Li secondary batteries)

L3 ANSWER 6 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:579780 CAPLUS

DOCUMENT NUMBER: 145:48607

TITLE: Energy storage device and module thereof for use in

electric vehicle

INVENTOR(S): Arai, Juichi; Kumashiro, Yoshiaki; Yoshikawa,

Masanori; Kobayashi, Mituru; Yamaki, Takahiro

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 18 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE		
US 2006124973	A1	20060615	US 2005-299742	20051213		
JP 2006172775	A2	20060629	JP 2004-360659	20041214		
PRIORITY APPLN. INFO.:			JP 2004-360659 A	20041214		

ST energy storage device module elec vehicle use; battery module

elec vehicle use

IT Battery cathodes

Battery electrolytes

Electric vehicles

Energy storage systems

(energy storage device and module thereof for use in elec. vehicle)

IT Secondary batteries

(lithium; energy storage device and module thereof for use in elec. vehicle)

ΙT 71-43-2D, Benzene, derivative 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-86-1D, Pyridine, derivative 287-92-3D, Cyclopentane, derivative 463-79-6D, Carbonic acid, ester 463-79-6D, Carbonic acid, cyclic ester 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0D, Dioxolane, derivative 1120-71-4D, Propane sultone, derivative 1332-29-2, Tin oxide 2926-29-6, Sodium trifluoromethanesulfinate 4437-85-8, Butylene carbonate 3741-38-6D, Ethylene sulfite, derivative 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7439-93-2, Lithium, uses 7550-35-8, Lithium bromide 7447-41-8, Lithium chloride, uses 7631-86-9, Silicon oxide, uses 7647-14-5, Sodium chloride, uses 7647-15-6, Sodium bromide (NaBr), uses 7681-82-5, Sodium iodide, uses 11113-67-0, Iron lithium oxide 10377-51-2, Lithium iodide 11113-84-1, 13463-67-7, Ruthenium oxide 12005-86-6, Sodium hexafluoroarsenate 13755-29-8, Sodium tetrafluoroborate 13824-63-0, Titanium oxide, uses Cobalt lithium phosphate colipo4 14283-07-9, Lithium tetrafluoroborate 15290-77-4, 1,1,2,2,3,3,4-Heptafluorocyclopentane 15365-14-7, Iron 16734-12-6D, Disulfide, derivative 21324-39-0, lithium phosphate felipo4 21324-40-3, Lithium hexafluorophosphate Sodium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide 52627-24-4, Cobalt lithium oxide 152894-04-7 91742-21-1 132404-42-3 132843-44-8 90076-65-6 156088-05-0 164982-97-2 412030-34-3, Lithium 412030-35-4, Lithium tetrakis(trifluoroacetoxy)borate tetrakis(pentafluoropropioxy)borate 607706-67-2, Cobalt lithium 757954-84-0, Chromium lithium manganese nickel oxide ((Co, Mn, Ni)LiO2) 889766-69-2 889766-70-5 phosphate (Cr0-1Li0-2(PO4))

(energy storage device and module thereof for use in elec. vehicle)

RL: DEV (Device component use); USES (Uses)

L3 ANSWER 7 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:558888 CAPLUS

DOCUMENT NUMBER: 145:66269

TITLE: Cathode active materials for nonaqueous electrolyte

secondary batteries and method for their

manufacture

INVENTOR(S): Yamanaka, Atsushi; Miyashiro, Hajime; Kobayashi,

Akira; Seki, Shiro

PATENT ASSIGNEE(S): Sumitomo Metal Mining Co., Ltd., Japan; Central

Research Institute of Electric Power Industry

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006156032	A2	20060615	JP 2004-342544	20041126
PRIORITY APPLN. INFO.:			JP 2004-342544	20041126

TI Cathode active materials for nonaqueous electrolyte secondary batteries and method for their manufacture

AB The title cathode active materials are powders having composition formula LixMOy (M = Co, Mn, Ni, V, and/or Fe; x = 0.02-2.2; y = 1.4-3) that are uniformly equipped with coatings of 1.5-8.5 weight% (based on the total powder) ZrO2. The said materials are manufactured by formation of a fluidized bed of the powder by feeding hot air and heating to ≥35°, addition of zirconia sol to the bed for formation of the coating, and firing at 400-650°. Batteries having excellent cycle characteristics and high-temperature storage stability can be obtained from the materials.

ST zirconia coated lithium mixed oxide cathode active material; nonaq electrolyte secondary battery cathode active material

IT Battery cathodes

(coating of mixed lithium oxide powder with zirconia for preparation of cathode active materials in secondary batteries)

IT Secondary batteries

(nonaq. electrolyte; coating of mixed lithium oxide powder with zirconia for preparation of cathode active materials in secondary batteries)

IT 1314-23-4P, Zirconia, uses 890851-96-4P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(coating of mixed lithium oxide powder with zirconia for preparation of cathode active materials in secondary batteries)

L3 ANSWER 8 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:513062 CAPLUS

DOCUMENT NUMBER: 145:30870

TITLE: Lithium secondary batteries comprising

nonaqueous electrolytes containing cyclic

1,2-propanediol sulfate

INVENTOR(S): Chao, Chin Pao; Aoyama, Shigeo PATENT ASSIGNEE(S): Hitachi Maxell Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006140115	A2	20060601	JP 2004-331016	20041115
PRIORITY APPLN. INFO.:			JP 2004-331016	20041115

```
containing cyclic 1,2-propanediol sulfate
AB
     The nonaq. electrolytes of the title batteries contain 0.1-20
     weight% 4-Methyl-2,2-dioxo-1,3,2-dioxathiolane. Preferably, the cathode
     contains layer- or spinel-structured Mn- and Li-containing mixed oxides, e.g.
     LixNi1/3Mn1/3Co1/3O2 (0 < x \leq 1.1), LixNi5/12Mn5/1 2Co1/6O2 (0 < x
     \leq 1.1), LiyMn2O4 (y = 0-2.1). The batteries show
     excellent cycle characteristics and storage stability at high temperature
ST
     secondary lithium battery electrolyte solvent; cyclic
     propanediol sulfate battery electrolyte solvent
     Battery cathodes
IT
        (lithium secondary batteries with cyclic propanediol sulfate
        electrolyte solvents for excellent cycle characteristics)
     Secondary batteries
IT
        (lithium; lithium secondary batteries with cyclic propanediol
        sulfate electrolyte solvents for excellent cycle characteristics)
     12190-79-3, Cobalt lithium oxide (CoLiO2)
                                                 346417-97-8, Cobalt lithium
IT
     manganese nickel oxide (Co0.33LiMn0.33Ni0.3302)
                                                       889059-24-9, Cobalt
     lithium manganese nickel oxide (Co0.33Li0-1.1Mn0.33Ni0.33O2)
     889059-25-0, Cobalt lithium manganese nickel oxide
     (Co0.17Li0-1.1Mn0.42Ni0.42O2)
                                    889059-26-1, Lithium manganese oxide
     (Li0-2.1Mn204)
     RL: DEV (Device component use); USES (Uses)
        (cathode oxide; lithium secondary batteries with cyclic
        propanediol sulfate electrolyte solvents for excellent cycle
        characteristics)
     14283-07-9, Lithium tetrafluoroborate
                                             21324-40-3, Lithium
IT
     hexafluorophosphate
     RL: DEV (Device component use); USES (Uses)
        (electrolyte salt; lithium secondary batteries with cyclic
        propanediol sulfate electrolyte solvents for excellent cycle
        characteristics)
     96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
                                                                  616-38-6,
IT
     Dimethyl carbonate 623-53-0, Methylethyl carbonate
     RL: DEV (Device component use); USES (Uses)
        (electrolyte solvent; lithium secondary batteries with cyclic
        propanediol sulfate electrolyte solvents for excellent cycle
        characteristics)
ΙT
     5689-83-8
     RL: DEV (Device component use); TEM (Technical or engineered material
     use); USES (Uses)
        (electrolyte solvent; lithium secondary batteries with cyclic
        propanediol sulfate electrolyte solvents for excellent cycle
        characteristics)
                                 7439-95-4, Magnesium, uses
                                                              7440-32-6.
IT
     7429-90-5, Aluminum, uses
     Titanium, uses
                     7440-56-4, Germanium, uses
                                                  7440-67-7, Zirconium, uses
     RL: DEV (Device component use); MOA (Modifier or additive use); TEM
     (Technical or engineered material use); USES (Uses)
        (mixed oxide cathode containing; lithium secondary batteries with
        cyclic propanediol sulfate electrolyte solvents for excellent cycle
        characteristics)
     ANSWER 9 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
                         2006:494303 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         145:11274
TITLE:
                         Secondary nonaqueous electrolyte battery
INVENTOR(S):
                         Ueda, Atsushi; Watanabe, Shoichiro; Yao, Takeshi;
                         Takeuchi, Takashi; Shirane, Takayuki; Saito, Takaya;
                         Nagata, Hiromi
PATENT ASSIGNEE(S):
                         Matsushita Electric Industrial Co., Ltd., Japan
SOURCE:
                         PCT Int. Appl., 52 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
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Lithium secondary batteries comprising nonaqueous electrolytes

ΤI

PATENT INFORMATION:

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PATENT NO.
                         KIND
                                DATE
                                           APPLICATION NO.
                                                                   DATE
                        A1 20060526 WO 2005-JP21046

RR RG. BR, BW, BY,
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                                                                  _____
     WO 2006054604
                                                                 20051116
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ,
             LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ,
             NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
             SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
             YU, ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,
             CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,
             GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM
     JP 2006173099
                         A2
                                20060629
                                          JP 2005-332000
                                                                   20051116
PRIORITY APPLN. INFO.:
                                            JP 2004-335661
                                                               A 20041119
REFERENCE COUNT:
                         32
                               THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ΤI
     Secondary nonaqueous electrolyte battery
AΒ
     The battery, whose charge-terminating voltage is set at 4.25-4.5
     V, has an anode, containing a Li-intercalating active mass, a cathode containing a
     Li composite oxide active mass, a separator between the 2 electrodes, and
     a nonaq. Li+-conductive electrolyte; where the battery satisfies
     R = Wp/Wn = 1.3-1.9 (Wp = weight of active mass contained in cathode per unit
     area; Wn = weight of active mass contained in anode; R = ratio of Wp to Wn).
ST
     secondary battery cathode lithium composite oxide
TT
     Secondary batteries
        (lithium; cathodes containing lithium composite oxides and anodes containing
        Li-intercalating active mass for secondary lithium batteries)
IT
     113443-18-8, Silicon oxide (SiO) 193215-96-2, Cobalt lithium
     manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 372491-83-3, Aluminum
     cobalt lithium magnesium oxide (Al0.01Co0.94LiMg0.0502)
     RL: DEV (Device component use); USES (Uses)
        (cathodes containing lithium composite oxides and anodes containing
        Li-intercalating active mass for secondary lithium batteries)
     96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6,
ΙT
     Dimethyl carbonate 827-52-1, Cyclohexyl benzene 7429-90-5, Aluminum,
           7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses
     7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-21-3,
     Silicon, uses 7440-24-6, Strontium, uses 7440-31-5, Tin, uses
     7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-67-7,
                       7440-70-2, Calcium, uses 14283-07-9, Lithium
     Zirconium, uses
     tetrafluoroborate
                        21324-40-3, Lithium hexafluorophosphate
     Titanium oxide (Ti00.4-2) 137633-98-8, Manganese oxide (Mn00.4-2)
     888217-29-6, Magnesium oxide (MgOO.4-2) 888217-30-9, Aluminum oxide
     (A100.4-2)
                 888217-31-0, Nickel oxide (NiOO.4-2) 888217-32-1, Zirconium
     oxide (ZrO0.4-2)
                       888217-33-2, Molybdenum oxide (MoOO.4-2) 888217-34-3,
     Tungsten oxide (WOO.4-2)
     RL: MOA (Modifier or additive use); USES (Uses)
        (cathodes containing lithium composite oxides and anodes containing
        Li-intercalating active mass for secondary lithium batteries)
L3
     ANSWER 10 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2006:493544 CAPLUS
DOCUMENT NUMBER:
                         144:491899
TITLE:
                         Layered lithium nickel manganese mixed oxide powder
                         for secondary lithium battery cathode
                         material, and its use in the cathode and the
                         battery
INVENTOR(S):
                         Ishida, Yuko; Shizuka, Kenji; Okahara, Kenji
PATENT ASSIGNEE(S):
                        Mitsubishi Chemical Corp., Japan
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 20 pp.
                        CODEN: JKXXAF
DOCUMENT TYPE:
                         Patent
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LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

KIND DATE PATENT NO. APPLICATION NO. DATE ____ --------------------JP 2006134816 20060525 JP 2004-325326 A2 20041109 PRIORITY APPLN. INFO.: JP 2004-325326 20041109

TI Layered lithium nickel manganese mixed oxide powder for secondary lithium battery cathode material, and its use in the cathode and the

battery

AB The powder is represented by Li1+xNi1-y-z-pMnyCozMpO2 (x 0-0.20; y = 0.25-0.5; z = 0-0.5; p = 0-0.2; y + z + p = 0.5-0.75; M = Al, Fe, Ti, Mg, Cr, Ga, Cu, Zn, Nb, Zr) and satisfies particle disintegration evaluation value (a) >70 and \leq 95% (a is defined based on powder particle median diameter before and after pressurization between plates). The cathode has a cathode active mass layer containing the powder and a binder on a current collector, and the battery uses the cathode. The powder shows good coatability, and the battery shows high capacity and rate performance.

ST layered lithium nickel manganese mixed oxide powder battery cathode

IT Battery cathodes

(layered Li Ni Mn mixed oxide powder for secondary Li battery cathode)

IT Secondary batteries

(lithium; layered Li Ni Mn mixed oxide powder for secondary Li battery cathode)

IT 346417-97-8P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 500912-67-4P, Cobalt lithium manganese nickel oxide (Co0.33Li1.05Mn0.33Ni0.33O2) 887115-95-9P, Cobalt lithium manganese nickel oxide (Co0.2Li1.02Mn0.4Ni0.4O2) RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)

(layered Li Ni Mn mixed oxide powder for secondary Li battery cathode)

L3 ANSWER 11 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:462579 CAPLUS

DOCUMENT NUMBER: 144:491843

TITLE: Lithium manganese nickel cobalt oxide cathode active

materials for secondary lithium batteries

and secondary lithium batteries

INVENTOR(S): Hara, Kenji; Yuasa, Toyotaka; Kasai, Masahiro PATENT ASSIGNEE(S): Shin-Kobe Electric Machinery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2006127923 A2 20060518 JP 2004-315039 20041029

PRIORITY APPLN. INFO.: JP 2004-315039 20041029

TI Lithium manganese nickel cobalt oxide cathode active materials for secondary lithium batteries and secondary lithium batteries

AB The claimed cathode active materials have layer crystal structures, have chemical composition formula LiaMnxNiyCozO2 (0 < a \leq 1.2; x = 0.1-0.8; y = 0.1-0.44; z = 0.1-0.6; x + y + z = 1), and have tapping d. 1.5-2.5 g/cm3 or have 90% secondary particle accumulative frequency diameter \leq 20 μ m and a certain primary particle distribution within the secondary particle, i.e. the average primary particle size ratio of those in the central 20 area% to those in the peripheral 20 area% in the secondary particle

crosscut section, is 0.i-1.2. The batteries are capable of high-rate discharging under extremely low temps.

ST layered lithium manganese nickel cobalt oxide battery cathode;

secondary particle mixed nickel oxide battery cathode

IT Battery cathodes Electric vehicles

(layer structured lithium manganese nickel cobalt oxide cathode active materials for secondary lithium batteries)

IT Secondary batteries

(lithium; layer structured lithium manganese nickel cobalt oxide cathode active materials for secondary lithium batteries)

IT 217309-43-8, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 681160-59-8, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.4Ni0.3O2) 887116-17-8, Cobalt lithium manganese nickel oxide (Co0.1-0.6Li0-1.2Mn0.1-0.8Ni0.1-0.44O2) 887116-18-9, Cobalt lithium manganese nickel oxide (Co0.33Li1.03Mn0.33Ni0.33O2) 887116-20-3, Cobalt lithium manganese nickel oxide (Co0.3Li1.03Mn0.3Ni0.4O2) 887116-21-4, Cobalt lithium manganese nickel oxide (Co0.3Li1.03Mn0.3Ni0.4O2)

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(cathode active material; layer structured lithium manganese nickel cobalt oxide cathode active materials for secondary lithium batteries)

L3 ANSWER 12 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:440374 CAPLUS

DOCUMENT NUMBER: 144:491812

TITLE: Preparation of lithium ion cell anode material of

LiMnxCoyNi1-x-yO2

INVENTOR(S): Yang, Wensheng; Duan, Xue; Wang, Bei

PATENT ASSIGNEE(S): Beijing University of Chemical Technology, Peop. Rep.

China

SOURCE: Faming Zhuanli Shenging Gongkai Shuomingshu, 11 pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1767236	Α	20060503	CN 2005-10102789	20050919
PRIORITY APPLN. INFO.:			CN 2005-10102789	20050919

ST lithium ion cell battery anode manganese cobalt nickel oxide

IT Secondary batteries

(lithium; preparation of lithium ion cell anode material of LiMnxCoyNil-x-yO2)

IT Battery anodes Crystallization

Electric properties

(preparation of lithium ion cell anode material of LiMnxCoyNi1-x-y02)

146956-42-5P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.2Ni0.402)

193215-96-2P, Cobalt lithium manganese nickel oxide
(Co0.2LiMn0.4Ni0.402) 346417-97-8P, Cobalt lithium manganese nickel
oxide (Co0.33LiMn0.33Ni0.33O2) 632287-15-1P, Cobalt lithium manganese
nickel oxide (Co0.25LiMn0.5Ni0.25O2) 887268-43-1P, Cobalt lithium
manganese nickel oxide (Co0.4LiMn0.4Ni0.2O2)
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)

(preparation of lithium ion cell anode material of LiMnxCoyNil-x-yO2)

L3 ANSWER 13 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:439731 CAPLUS

DOCUMENT NUMBER: 144:436121

TITLE: Cathode material for secondary lithium battery

and its manufacture

INVENTOR(S): Kajiya, Yoshio; Tasaki, Hiroshi PATENT ASSIGNEE(S): Nikko Materials Co., Ltd., Japan

PCT Int. Appl., 20 pp. SOURCE:

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

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PATENT NO.
                         DATE
                  KIND
                                  APPLICATION NO.
                                                          DATE
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                  ____
                  A1 20060511 WO 2005-JP18843
WO 2006049001
                                                          20051013
   W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
       CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
       GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ,
       LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ,
       NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
       SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
       YU, ZA, ZM, ZW
   RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
       IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,
       CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,
       GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
       KG, KZ, MD, RU, TJ, TM
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PRIORITY APPLN. INFO.:

JP 2004-318718 A 20041102

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TΙ Cathode material for secondary lithium battery and its manufacture

ST secondary battery cathode lithium transition metal oxide phosphorus content

IT Battery cathodes

(compns. and manufacture of cathode materials containing lithium transition metal composite oxides with controlled phosphorus amts. for secondary lithium batteries)

ΙT 12031-65-1P, Lithium nickel oxide (LiNiO2) 12057-17-9P, Lithium manganese oxide (LiMn2O4) 12190-79-3P, Cobalt lithium oxide (CoLiO2) 113066-89-0P, Cobalt lithium nickel oxide (Co0.2LiNi0.802) 118557-79-2P, Cobalt iron lithium oxide (Co0.9Fe0.1LiO2) 128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.502) 134398-47-3P, Cobalt lithium manganese oxide (Co0.9LiMn0.102) 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 196313-88-9P, Cobalt iron lithium nickel oxide (Co0.1Fe0.1LiNi0.802) 245437-21-2P, Cobalt iron lithium nickel oxide (Co0.2Fe0.1LiNi0.702) 346417-97-8P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 399507-65-4P, Iron lithium manganese oxide (Fe0.33LiMn0.6702) 405890-07-5P, Iron lithium manganese nickel oxide (Fe0.1LiMn0.45Ni0.45O2) 872355-94-7P, Iron lithium nickel oxide (Fe0.33LiNi0.6702)

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(compns. and manufacture of cathode materials containing lithium transition metal composite oxides with controlled phosphorus amts. for secondary lithium batteries)

ANSWER 14 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3

2006:402355 CAPLUS ACCESSION NUMBER:

DOCUMENT NUMBER: 144:415971

TITLE: Method of preparation of conductive agent-cathode active material composite for lithium secondary

battery

INVENTOR(S): Cheon, Sang-Eun; Yoo, Seok-Yoon; Yoon, Hye-Won; Kim,

Jae-Kyung

PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea

SOURCE: Eur. Pat. Appl., 27 pp. CODEN: EPXXDW

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PA'	TENT	NO.			KIN	D [DATE			APPL	ICAT	ION I	NO.		D.	ATE		
															_			
EP	1653	534			A1	2	20060	0503		EP 20	005-	1100	64		2	0051	027	
	R:	AT,																
		ΙE,	SI,	LT,	LV,	FΙ,	RO,	MK,	CY,	AL,	TR,	ΒG,	CZ,	EE,	ΗU,	PL,	SK,	
		BA,	HR,	IS,	YU													
US	2006	0939	20		A1	2	20060	0504		US 20	005-	2587	31		2	0051	025	
CN	1770	516			Α	2	20060)510		CN 20	005-	1011	6672		2	0051	026	
JP	2006	1281	19		A2	2	20060)518		JP 20	005-	3145	01		2	0051	028	
PRIORIT	Y APP	LN.	INFO	. :						KR 20	004-	8663	0	Ž	A 2	0041	028	
REFEREN	CE CO	UNT:			16	TH	IERE	ARE	16	CITE	D RE	FERE	NCES	AVA:	ILAB:	LE FO	OR THI	S
						RE	CORE). AI	rr C	ITAT	IONS	AVA:	ILAB	LE II	N TH	E RE	FORMA	T
REFEREN	CE CO	UNT:			16													

- TI Method of preparation of conductive agent-cathode active material composite for lithium secondary battery
- AB The invention relates to a conductive agent/pos. active material composite for a lithium secondary battery. The composite includes a pos. active material capable of reversibly intercalating/deintercalating lithium ions, and a conductive agent on the surface of the pos. active material. The conductive agent comprises a first conductive agent having a sp. surface area ranging from about 200 to about 1500 m2/g and a second conductive agent having a sp. surface area of about 100 m2/g or less.
- ST lithium secondary battery cathode conductive agent composite
- IT Secondary batteries

(lithium; method of preparation of conductive agent-cathode active material composite for lithium secondary battery)

IT Battery cathodes

Electric conductors

(method of preparation of conductive agent-cathode active material composite for lithium secondary battery)

IT Carbon black, uses

IT

RL: MOA (Modifier or additive use); USES (Uses)

(method of preparation of conductive agent-cathode active material composite for lithium secondary battery)

1314-62-1, Vanadium oxide (V2O5), uses 1317-33-5, Molybdenum sulfide 12017-96-8, Chromium lithium oxide (CrLiO2) (MoS2), uses 12022-46-7, Iron lithium oxide (FeLiO2) 12031-65-1, Lithium nickel oxide (LiNiO2) 12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium manganese oxide 12162-79-7, Lithium manganese oxide limno2 12162-87-7, Lithium vanadium oxide livo2 12162-92-4, Lithium vanadium oxide (LiV2O5) 12169-03-8, Lithium yttrium oxide (LiYO2) 12190-79-3, Cobalt lithium oxide (CoLiO2) 12201-18-2, Lithium molybdenum sulfide (LiMoS2) 12209-15-3, Lithium scandium oxide lisco2 13568-36-0, Lithium nickel vanadium oxide (LiNiVO4) 55326-82-4, Lithium titanium sulfide litis2 218446-64-1, Aluminum cobalt lithium nickel oxide (Al0.04Co0.15LiNi0.8102) 329025-35-6, Iron lithium phosphate (Fe2Li1-3(PO4)3) 884323-27-7, Iron lithium phosphate (Fe2Li0-3(PO4)3) 884323-28-8, Lithium vanadium phosphate (Li0-3V2(PO4)3) 884323-29-9, Chromium lithium phosphate (Cr2Li0-3(PO4)3)884323-30-2, Lithium manganese phosphate (Li0-3Mn2(PO4)3) 884323-31-3, Cobalt lithium phosphate (Co2Li0-3(PO4)3) 884323-32-4, Copper lithium phosphate (Cu2Li0-3(PO4)3) 884323-33-5, Aluminum cobalt lithium nickel oxide (Al0-0.1Co0-0.5Li0.9-1.1Ni0-0.902) 884323-35-7, Chromium cobalt lithium nickel oxide (Cr0-0.1Co0-0.5Li0.9-1.1Ni0-0.902) 884323-37-9, Cobalt lithium manganese nickel oxide (CoO-0.5LiO.9-1.1MnO-0.1NiO-0.902) 884323-39-1, Cobalt iron lithium nickel oxide (Co0-0.5Fe0-0:1Li0.9-1.1Ni0-0.902) 884323-41-5, Cobalt lithium magnesium nickel oxide (CoO-0.5Li0.9-1.1MgO-0.1Ni0-0.902) 884323-45-9, Cobalt lanthanum lithium nickel oxide (CoO-0.5LaO-0.1LiO.9-1.1Ni0-0.902) 884323-47-1, Cerium cobalt lithium nickel oxide (Ce0-0.1Co0-0.5Li0.9-1.1Ni0-0.902) 884323-48-2, Cobalt lithium nickel strontium oxide (Co0-0.5Li0.9-1.1Ni0-0.9Sr0-0.102) 884323-49-3, Cobalt

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lithium nickel vanadium oxide (Co0-0.5Li0.9-1.1Ni0-0.9V0-0.102)
     884323-50-6, Lithium manganese nickel vanadium oxide (Li0.9-1.1Mn0-0.5Ni0-
                    884323-51-7, Lithium manganese nickel strontium oxide
     0.900-0.102
     (Li0.9-1.1Mn0-0.5Ni0-0.9Sr0-0.102)
                                          884323-52-8, Cerium lithium manganese
     nickel oxide (Ce0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902)
                                                       884323-53-9, Lanthanum
     lithium manganese nickel oxide (LaO-0.1LiO.9-1.1MnO-0.5NiO-0.902)
     884323-54-0, Lithium magnesium manganese nickel oxide (Li0.9-1.1Mg0-0.1Mn0-
     0.5Ni0-0.902
                     884323-55-1, Iron lithium manganese nickel oxide
     (Fe0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902)
                                          884323-56-2, Lithium manganese nickel
     oxide (Li0.9-1.1Mn0-0.6Ni0-0.902)
                                         884323-58-4, Chromium lithium
     manganese nickel oxide (Cr0-0.1Li0.9-1.1Mn0-0.5Ni0-0.902)
                                                                  884323-59-5,
     Aluminum lithium manganese nickel oxide (AlO-0.1Li0.9-1.1MnO-0.5Ni0-0.902)
     884323-62-0 884323-64-2 884323-66-4, Cobalt
     lithium manganese nickel oxide (CoO-0.5Li0.9-1.1MnO-0.6NiO-0.902)
     884323-69-7 884323-71-1 884323-73-3
     884323-74-4 884323-75-5 884323-76-6
     884323-77-7, Aluminum lithium nickel oxide (Al0-0.1Li0.9-1.1NiO2)
     884323-78-8, Chromium lithium nickel oxide (Cr0-0.1Li0.9-1.1NiO2)
     884323-79-9, Lithium manganese nickel oxide (Li0.9-1.1Mn0-0.1NiO2)
     884323-80-2, Iron lithium nickel oxide (Fe0-0.1Li0.9-1.1NiO2)
     884323-81-3, Lithium magnesium nickel oxide (Li0.9-1.1Mg0-0.1NiO2)
     884323-82-4, Lanthanum lithium nickel oxide (La0-0.1Li0.9-1.1NiO2)
     884323-83-5, Cerium lithium nickel oxide (Ce0-0.1Li0.9-1.1NiO2)
     884323-84-6, Lithium nickel strontium oxide (Li0.9-1.1NiSr0-0.102)
     884323-85-7, Lithium nickel vanadium oxide (Li0.9-1.1NiV0-0.102)
     884323-86-8, Aluminum cobalt lithium oxide (Al0-0.1CoLi0.9-1.102)
     884323-87-9, Chromium cobalt lithium oxide (Cr0-0.1CoLi0.9-1.102)
     884323-88-0, Cobalt lithium manganese oxide (CoLi0.9-1.1Mn0-0.102)
     884323-89-1, Cobalt iron lithium oxide (CoFe0-0.1Li0.9-1.102)
     884323-90-4, Cobalt lithium magnesium oxide (CoLi0.9-1.1Mq0-0.102)
     884323-91-5, Cobalt lanthanum lithium oxide (CoLa0-0.1Li0.9-1.102)
     884323-92-6, Cerium cobalt lithium oxide (Ce0-0.1CoLi0.9-1.102)
     884323-93-7, Cobalt lithium strontium oxide (CoLi0.9-1.1Sr0-0.102)
     884323-94-8, Cobalt lithium vanadium oxide (CoLi0.9-1.1V0-0.102)
     884323-95-9, Aluminum lithium manganese oxide (Al0-0.1Li0.9-1.1MnO2)
     884323-96-0, Chromium lithium manganese oxide (Cr0-0.1Li0.9-1.1MnO2)
     884323-97-1, Lithium manganese oxide (Li0.9-1.1Mn1-1.102)
                                                                 884324-00-9,
     Iron lithium manganese oxide (Fe0-0.1Li0.9-1.1MnO2)
                                                            884324-02-1, Lithium
     magnesium manganese oxide (Li0.9-1.1Mg0-0.1MnO2)
                                                         884324-05-4, Lanthanum
     lithium manganese oxide (LaO-0.1LiO.9-1.1MnO2)
                                                      884324-08-7, Cerium
     lithium manganese oxide (Ce0-0.1Li0.9-1.1MnO2)
                                                      884324-11-2, Lithium
     manganese strontium oxide (Li0.9-1.1MnSr0-0.102)
                                                         884324-16-7, Lithium
     manganese vanadium oxide (Li0.9-1.1MnV0-0.102)
                                                      884324-19-0, Aluminum
     lithium manganese oxide (AlO-0.1Li0.9-1.1Mn2O4)
                                                       884324-21-4, Chromium
     lithium manganese oxide (Cr0-0.1Li0.9-1.1Mn2O4)
                                                       884324-23-6, Iron
     lithium manganese oxide (Fe0-0.1Li0.9-1.1Mn2O4)
                                                       884324-26-9, Lithium
     magnesium manganese oxide (Li0.9-1.1Mg0-0.1Mn2O4)
                                                          884324-28-1, Lanthanum
     lithium manganese oxide (La0-0.1Li0.9-1.1Mn2O4)
                                                       884324-30-5, Cerium
     lithium manganese oxide (Ce0-0.1Li0.9-1.1Mn2O4)
                                                       884324-31-6, Lithium
     manganese strontium oxide (Li0.9-1.1Mn2Sr0-0.104)
                                                         884324-32-7, Lithium
     manganese vanadium oxide (Li0.9-1.1Mn2V0-0.104)
     RL: DEV (Device component use); USES (Uses)
        (method of preparation of conductive agent-cathode active material composite
        for lithium secondary battery)
     ANSWER 15 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2006:399804 CAPLUS
DOCUMENT NUMBER:
                         145:106689
TITLE:
                         Factors influencing the crystal chemistry of
                         chemically delithiated layered HxNi1-y-zMnyCozO2
AUTHOR(S):
                         Choi, J.; Manthiram, A.
CORPORATE SOURCE:
                         Materials Science and Engineering Program, The
                         University of Texas at Austin, Austin, TX, 78712, USA
```

Journal of Materials Chemistry (2006), 16(18),

CODEN: JMACEP; ISSN: 0959-9428

1726-1733

SOURCE:

PUBLISHER: Royal Society of Chemistry DOCUMENT TYPE: Journal LANGUAGE: English REFERENCE COUNT: THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS 46 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT delithiated cobalt hydrogen manganese nickel oxide cathode lithium battery; crystal chem delithiated layered cobalt manganese nickel IT Battery cathodes (factors influencing the crystal chemical of chemical-delithiated layered HxNil-y-zMnyCozO2 cathode material for lithium batteries) IT 12017-00-4D, Cobalt oxide (CoO2), hydrogenated 12190-79-3, Cobalt lithium oxide (CoLiO2) 101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.502) 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502) 216481-53-7D, Cobalt lithium nickel oxide (Co0.5Li0.2Ni0.502), hydrogenated 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 390362-01-3, Cobalt lithium manganese nickel oxide (Co0.5LiMn0.25Ni0.25O2) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 459408-76-5, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.48O2) 484031-92-7D, Cobalt nickel oxide (Co0.5Ni0.502), hydrogenated 522613-35-0D, Manganese nickel oxide (MnNiO4), hydrogenated 697766-76-0, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.42Ni0.42O2) 781672-38-6, Cobalt lithium manganese nickel oxide (Co0.58LiMn0.21Ni0.2102) 854546-03-5, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.34Ni0.34O2) 854546-04-6, Cobalt lithium manganese nickel oxide (Co0.41LiMn0.3Ni0.3O2) 872998-55-5D, Cobalt manganese nickel oxide (Co0.5Mn0.25Ni0.25O2), hydrogenated 872998-56-6D, Cobalt manganese nickel oxide (Co0.41Mn0.3Ni0.3O2), hydrogenated 872998-57-7D, Cobalt manganese nickel oxide (Co0.15Mn0.42Ni0.42O2), hydrogenated 895529-68-7 895529-70-1 895529-72-3, Lithium manganese nickel hydride oxide (Li0.08Mn0.5Ni0.5H0.3402) 895529-74-5D, Cobalt manganese nickel oxide (Co0.33Mn0.34Ni0.34O2), hydrogenated RL: PRP (Properties); TEM (Technical or engineered material use); USES (factors influencing the crystal chemical of chemical-delithiated layered HxNi1-y-zMnyCozO2 cathode material for lithium batteries) ΙT 13826-86-3, Nitronium fluoroborate (NO2BF4) RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process) (in chemical delithiation of layered HxNil-y-zMnyCozO2 cathode material for lithium batteries) ANSWER 16 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN 2006:378241 CAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 145:86412 TITLE: Impact of cobalt substitution for manganese on the structural and electrochemical properties of LiNi0.5Mn0.502 AUTHOR(S): Li, Decheng; Sasaki, Yuki; Kobayakawa, Koichi; Sato, Yuichi CORPORATE SOURCE: High-Tech Research Center, Kanagawa University, 1-1-40 Suehiromachi, Tsurumi-ku, Yokohama, 230-0045, Japan SOURCE: Electrochimica Acta (2006), 51(18), 3809-3813 CODEN: ELCAAV; ISSN: 0013-4686 PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST cobalt lithium manganese nickel oxide cathode lithium battery

IT Battery cathodes

(impact of cobalt substitution for manganese on structural and electrochem. properties of LiNi0.5Mn0.502 cathode material for lithium batteries)

```
ΙT
    Secondary batteries
        (lithium; impact of cobalt substitution for manganese on structural and
       electrochem. properties of LiNiO.5MnO.502 cathode material for lithium
IT
    101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.502)
                                                              128975-24-6,
    Lithium manganese nickel oxide (LiMn0.5Ni0.502) 176206-89-6, Cobalt
    lithium manganese nickel oxide (Co0.3LiMn0.2Ni0.502) 191024-83-6, Cobalt
    lithium manganese nickel oxide (Co0.4LiMn0.1Ni0.502)
                                                           193215-53-1, Cobalt
    lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502) 193215-92-8
      Cobalt lithium manganese nickel oxide (Co0.1LiMn0.4Ni0.502)
    RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (impact of cobalt substitution for manganese on structural and
       electrochem. properties of LiNi0.5Mn0.5O2 cathode material for lithium
       batteries)
    ANSWER 17 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2006:367258 CAPLUS
DOCUMENT NUMBER:
                        144:373158
TITLE:
                        Nonaqueous electrolyte secondary battery
INVENTOR(S):
                        Deguchi, Masaki; Matsui, Tooru; Yoshizawa, Hiroshi
PATENT ASSIGNEE(S):
                        Matsushita Electric Industrial Co., Ltd., Japan
                        U.S. Pat. Appl. Publ., 8 pp., Cont.-in-part of Appl.
SOURCE:
                        No. PCT/JP05/004655.
                        CODEN: USXXCO
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        English
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
                    KIND DATE APPLICATION NO.
    PATENT NO.
                                                                -----
    US 2006083988 A1
                       ----
                               20060420 US 2005-287446 20051128
20051020 WO 2005-JP4655 20050316
        W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
            CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
            GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
            LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
            NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,
            SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
        RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
            AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
            EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
            RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
            MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.:
                                           JP 2004-113208
                                                             A 20040407
                                           WO 2005-JP4655
                                                              A2 20050316
TΙ
    Nonaqueous electrolyte secondary battery
    A non-aqueous electrolyte secondary battery includes: a pos.
    electrode capable of absorbing and desorbing lithium; a neg. electrode
    capable of absorbing and desorbing lithium; a separator interposed between
    the pos. electrode and the neg. electrode; and a non-aqueous electrolyte.
    pos. electrode includes a composite oxide represented by: LiNixMl-x-yLyO2
    as an active material. The formula satisfies 0.3≤x≤0.9 and
    0 \le y \le 0.1. The element M is at least one selected from the
    group consisting of Co and Mn, and the element L is at least one selected
    from the group consisting of Mg, Al, Ti, Sr, Zn, B, Ca, Cr, Si, Ga, Sn, P,
    V, Sb, Nb, Ta, Mo, W, Zr, Y and Fe. The non-aqueous electrolyte includes a
    main solvent, a solute and vinyl ethylene carbonate.
ST
    battery secondary nonaq electrolyte
ΙT
    Battery cathodes
      Battery electrolytes
    Secondary batteries
        (nonaq. electrolyte secondary battery)
IT
    882214-40-6, Cobalt lithium nickel oxide (Co0.15LiNi0.8402)
    RL: DEV (Device component use); USES (Uses)
```

(Al-doped; nonaq. electrolyte secondary battery)

```
ΙT
    96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
    7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO2)
    21324-40-3, Lithium hexafluorophosphate
                                             101920-93-8, Cobalt lithium
    nickel oxide (Co0.5LiNi0.502) 113066-90-3, Cobalt lithium nickel oxide
     (Co0.6LiNi0.402) 116327-68-5, Cobalt lithium nickel oxide
     (Co0.3LiNi0.702) 116327-69-6, Cobalt lithium nickel oxide
     (Co0.1LiNi0.902) 118557-81-6, Cobalt lithium nickel oxide
     (Co0.7LiNi0.302) 128975-24-6, Lithium manganese nickel oxide
     LiMn0.5Ni0.502 143623-49-8, Cobalt lithium nickel oxide
     (Co0.25LiNi0.7502) 179186-41-5, Lithium manganese nickel oxide
     (LiMn0.7Ni0.302)
                       193214-24-3, Aluminum cobalt lithium nickel oxide
     (Al0.05Co0.15LiNi0.802) 193215-92-8, Cobalt lithium manganese
    nickel oxide (Co0.1LiMn0.4Ni0.502) 195880-90-1, Cobalt lithium magnesium nickel oxide (Co0.15LiMg0.05Ni0.802) 203005-76-9, Cobalt lithium nickel
    borate oxide (Co0.15LiNi0.8(BO3)0.0501.85) 209908-08-7, Aluminum cobalt
     lithium nickel oxide (Al0.03Co0.15LiNi0.8202) 216385-46-5, Cobalt
     lithium nickel tin oxide (Co0.15LiNi0.8Sn0.0502) 216385-49-8, Cobalt
     lithium nickel oxide silicate (Co0.15LiNi0.801.8(SiO4)0.05) 216385-50-1,
    Cobalt iron lithium nickel oxide (Co0.15Fe0.05LiNi0.802) 216385-51-2,
    Cobalt lithium nickel titanium oxide (Co0.15LiNi0.8Ti0.0502)
     346417-97-8, Cobalt lithium manganese nickel oxide
     (Co0.33LiMn0.33Ni0.33O2)
                               846020-48-2
                                             849416-68-8, Cobalt lithium
    nickel niobium oxide (Co0.15LiNi0.8Nb0.0502) 859529-03-6, Cobalt gallium
    lithium nickel oxide (Co0.15Ga0.05LiNi0.802) 867248-92-8, Cobalt lithium
    nickel strontium oxide (Co0.15LiNi0.8Sr0.0502) 867248-93-9, Cobalt
    lithium nickel zinc oxide (Co0.15LiNi0.8Zn0.0502) 867248-94-0, Calcium
    cobalt lithium nickel oxide (Ca0.05Co0.15LiNi0.802) 867248-95-1,
    Chromium cobalt lithium nickel oxide (Cr0.05Co0.15LiNi0.802)
     867248-96-2, Cobalt lithium nickel oxide phosphate
     (Co0.15LiNi0.801.8(PO4)0.05) 867248-97-3, Cobalt lithium nickel vanadium
    oxide (Co0.15LiNi0.8V0.0502) 867248-98-4, Antimony cobalt lithium nickel
    oxide (Sb0.05Co0.15LiNi0.802) 867248-99-5, Cobalt lithium nickel
    tantalum oxide (Co0.15LiNi0.8Ta0.0502) 867249-00-1, Cobalt lithium
    molybdenum nickel oxide (Co0.15LiMo0.05Ni0.802) 867249-01-2, Cobalt
    lithium nickel zirconium oxide (Co0.15LiNi0.8Zr0.0502) 867249-02-3,
    Cobalt lithium nickel yttrium oxide (Co0.15LiNi0.8Y0.0502) 867249-03-4
     867249-04-5
                  867249-05-6 867249-06-7 882214-39-3, Aluminum cobalt
    lithium nickel oxide (Al0.01Co0.15LiNi0.8402) 882214-41-7, Cobalt
     lithium nickel tungsten oxide (Co0.15LiNi0.8W0.0502) 882214-42-8
     882214-43-9
                 882214-44-0
    RL: DEV (Device component use); USES (Uses)
        (nonaq. electrolyte secondary battery)
ΙT
    872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate
    RL: MOA (Modifier or additive use); USES (Uses)
        (nonaq. electrolyte secondary battery)
    ANSWER 18 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:185086 CAPLUS
DOCUMENT NUMBER:
                        144:236271
TITLE:
                        Method of preparation of cathode active material for
                        nonaqueous electrolyte secondary battery
INVENTOR(S):
                        Nakai, Kenji; Kurihara, Katsutoshi; Koishikawa,
                        Yoshimasa; Hara, Kenji; Hirahata, Syouji
PATENT ASSIGNEE(S):
                        Shin-Kobe Electric Machinery Co., Ltd., Japan
SOURCE:
                        Eur. Pat. Appl., 23 pp.
                        CODEN: EPXXDW
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
                        KIND DATE APPLICATION NO.
     PATENT NO.
                                                                 DATE
    EP 1630891 A1 20060301 EP 2005-18848 20050830
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK,
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BA, HR, IS, YU
     JP 2006066330
                          A2
                                20060309
                                            JP 2004-250031
                                                                    20040830
     US 2006046143
                          A1
                                20060302
                                            US 2005-213876
                                                                    20050830
     CN 1744352
                          A
                                20060308
                                            CN 2005-10093830
                                                                    20050830
PRIORITY APPLN. INFO.:
                                            JP 2004-250031
                                                                 A 20040830
REFERENCE COUNT:
                         7
                               THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
```

- TI Method of preparation of cathode active material for nonaqueous electrolyte secondary battery
- AB A non-aqueous electrolyte secondary battery that can restrict lowering of battery performance during battery preservation is provided. A neg. electrode mixture including graphite is applied on a rolled copper foil and a pos. electrode mixture including lithium manganate is applied on an aluminum foil are used. An oxide in which one element selected from Al, Si, Ti, V, Cr, Fe, Ni, Cu, Zn, Zr, Mo, W, Pb and dissimilar to elements constituting the lithium manganate is oxidized is intermixed with the lithium manganate. An intermixt. amount of the oxide is set such that a molar number of the dissimilar element contained in one gram of the pos. electrode active material to a molar number of lithium contained in one gram of the pos. electrode active material is not more than 5/1000. Charge transfer is restricted by the oxide during battery preservation.
- ST cathode active material nonaq electrolyte secondary battery
- IT Secondary batteries
 - (lithium; method of preparation of cathode active material for nonaq. electrolyte secondary battery)
- IT Transition metal oxides
 - RL: DEV (Device component use); USES (Uses)
 - (lithium; method of preparation of cathode active material for nonaq. electrolyte secondary battery)
- IT Battery cathodes
 - (method of preparation of cathode active material for nonaq. electrolyte secondary battery)
- IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 39457-42-6, Lithium manganese oxide 52627-24-4, Cobalt lithium oxide 128975-24-6, Lithium manganese nickel oxide LiMn0.5Ni0.5O2 162684-16-4, Lithium manganese nickel oxide 182442-95-1, Cobalt lithium manganese nickel oxide 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2)
 - RL: DEV (Device component use); USES (Uses)
 - (method of preparation of cathode active material for nonaq. electrolyte secondary battery)
- IT 1308-06-1, Cobalt oxide (Co304) 1308-38-9, Chromic oxide, uses 1309-37-1, Ferric oxide, uses 1309-60-0, Lead oxide (PbO2) 1313-99-1, Nickel oxide, uses 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium oxide, uses 1314-35-8, Tungsten oxide, uses 1317-38-0, Copper oxide (CuO), uses 1332-37-2, Iron oxide, uses 1335-25-7, Lead oxide 1344-28-1, Aluminum oxide, uses 1344-70-3, Copper oxide 7631-86-9, Silicon oxide, uses 11098-99-0, Molybdenum oxide 11099-11-9, Vanadium 11118-57-3, Chromium oxide 12036-21-4, Vanadium dioxide 13463-67-7, Titanium oxide, uses 18868-43-4, Molybdenum oxide (MoO2) RL: MOA (Modifier or additive use); USES (Uses)
 - (method of preparation of cathode active material for nonaq. electrolyte secondary battery)
- L3 ANSWER 19 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:116858 CAPLUS

DOCUMENT NUMBER: 144:174334

TITLE: Manufacture of manganese based cathode active mass and

its usage

INVENTOR(S): Sun, Yucheng; Chen, Liquan; Huang, Xuejie

PATENT ASSIGNEE(S): Institute of Physics, Chinese Academy of Sciences,

Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 18 pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

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PATENT NO.
                    KIND DATE APPLICATION NO.
                                                                  DATE
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                                            ------
                                                                    _____
     CN 1595689
                                20050316 CN 2003-156807
                         Α
                                                                    20030908
PRIORITY APPLN. INFO.:
                                            CN 2003-156807
     The cathode active mass, useful for secondary Li batteries, is a
     layer structured LiMnl-x-yNixMyO2, where M is Li, Mg, Co, Al, and Cr or a
     1:(1-5) mol ratio mixture of 2 of the elements, 0.2 \le x \le 0.8, 0
     \leq y \leq 0.6, and (x+y) \leq 1; and is manufactured by mixing a
     (1.0-4)\,\mathrm{M} solution of soluble Mn and M salts with a (2.0-8.0)\,\mathrm{M} alkaline solution and a
     (0.1-2.0)M in a reaction vessel, stirring the mixture, filtering, washing
     the precipitate and drying to obtain a Mn containing precursor; modifying the
     precursor with a soluble modifying salt and a complexing agent by a sol-gel
     process or by precipitation; wet mixing the modified precursor with a Li salt at a
     precursor/Li salt mol. ratio 1:(1.0-1.1), and mist spraying to form 1-100
     μm solid particles, and firing at 600-1100° for 1-48 h.
ST
     battery cathode layer structured lithium manganese nickel oxide
     manuf
IT
     Battery cathodes
     Sol-gel processing
        (method for manufacture of manganese pos. electrode material and its
        application)
ΙT
     128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
     170110-41-5P, Cobalt lithium manganese nickel oxide (Co0.6LiMn0.2Ni0.2O2)
     179802-95-0P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.1Ni0.802)
     193216-02-3P 217309-43-8P, Cobalt lithium manganese nickel oxide
     (Co0.3LiMn0.3Ni0.402)
                             848828-26-2P, Lithium magnesium manganese nickel
     oxide (LiMg0.05Mn0.5Ni0.4502) 874442-89-4P, Aluminum lithium manganese
     nickel oxide (Al0.05LiMn0.15Ni0.802) 874442-90-7P, Aluminum lithium
     manganese nickel oxide (Al0.15LiMn0.35Ni0.502) 874442-91-8P, Chromium
     lithium manganese nickel oxide (Cr0.05LiMn0.15Ni0.802)
                                                               874442-92-9P,
     Chromium lithium manganese nickel oxide (Cr0.3LiMn0.3Ni0.402)
     874442-93-0P, Lithium manganese nickel oxide (Lil.05Mn0.15Ni0.802)
     874442-94-1P, Lithium manganese nickel oxide (Li1.15Mn0.35Ni0.502)
     874442-95-2P, Lithium magnesium manganese nickel oxide
     (LiMg0.2Mn0.5Ni0.302) 874442-96-3P, Lithium magnesium manganese nickel
     oxide (LiMg0.1Mn0.5Ni0.402)
                                   874442-97-4P
                                                   874442-98-5P 874442-99-6P
     874443-00-2P, Aluminum lithium manganese nickel oxide
     (Al0.05Li1.1Mn0.35Ni0.502) 874443-01-3P 874443-02-4P
     RL: DEV (Device component use); IMF (Industrial manufacture); PREP
     (Preparation); USES (Uses)
        (compns. and manufacture of layer structured substituted lithium manganese
        oxide cathode active mass for secondary lithium batteries)
     554-13-2, Lithium carbonate 1307-96-6, Cobalt oxide (CoO), uses
IT
     1308-06-1, Cobalt oxide (Co3O4) 1309-48-4, Magnesia, uses 1313-13-9,
     Manganese dioxide, uses 1314-23-4, Zirconia, uses 1344-28-1, Alumina,
            7784-30-7, Aluminum phosphate (AlPO4) 7789-24-4, Lithium
                    10377-52-3, Trilithium phosphate 12057-17-9, Lithium
     fluoride, uses
     manganese oxide (LiMn2O4) 12057-24-8, Lithium oxide, uses 12190-79-3,
    Cobalt lithium oxide (CoLiO2) 13463-67-7, Titania, uses 37220-89-6, Lithium aluminate 99489-75-5, Chromium lithium oxide (Cr2LiO4)
     RL: MOA (Modifier or additive use); USES (Uses)
        (compns. and manufacture of layer structured substituted lithium manganese
        oxide cathode active mass for secondary lithium batteries)
IT
     68-04-2, Trisodium citrate 77-92-9, Citric acid, uses 87-69-4,
    Tartaric acid, uses 302-01-2, Hydrazine, uses 1336-21-6, Ammonium hydroxide 6484-52-2, Ammonium nitrate, uses 7783-20-2, Ammonium
     sulfate, uses 12125-02-9, Ammonium chloride, uses
     RL: NUU (Other use, unclassified); USES (Uses)
        (compns. and manufacture of layer structured substituted lithium manganese
```

L3

oxide cathode active mass for secondary lithium batteries)

ACCESSION NUMBER: 2006:116823 CAPLUS

DOCUMENT NUMBER: 144:174327

TITLE: Manufacture of cathode material for secondary lithium

batter

INVENTOR(S): Wu, Mengtao; Chen, Botao; Huang, Laihe; Xu, Ning;

Zhang, Ning

PATENT ASSIGNEE(S): Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 7 pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1595680	Α	20050316	CN 2004-10019741	20040625
PRIORITY APPLN. INFO.:			CN 2004-10019741	20040625

TI Manufacture of cathode material for secondary lithium battery

ST secondary battery cathode manuf lithium nickel manganese

composite oxide

IT Battery cathodes

(manufacture of cathodes containing lithium manganese nickel composite oxides for secondary lithium batteries)

IT 193215-96-2P, Cobalt lithium manganese nickel oxide

(Co0.2LiMn0.4Ni0.4O2) 193216-02-3P 346417-97-8P, Cobalt

lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)

RL: IMF (Industrial manufacture); TEM (Technical or engineered material

use); PREP (Preparation); USES (Uses)

(manufacture of cathodes containing lithium manganese nickel composite oxides for secondary lithium batteries)

IT 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide (Li(OH))

602297-52-9, Cobalt manganese nickel hydroxide (Co0.33Mn0.33Ni0.33(OH)2)

602297-53-0, Cobalt manganese nickel hydroxide (Co0.2Mn0.4Ni0.4(OH)2)

874753-63-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(manufacture of cathodes containing lithium manganese nickel composite oxides for secondary lithium batteries)

L3 ANSWER 21 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:90687 CAPLUS

DOCUMENT NUMBER: 144:353653

TITLE: Layered Li1+x(Ni0.425Mn0.425Co0.15)1-xO2 Positive Electrode Materials for Lithium-Ion Batteries

AUTHOR(S): Tran, N.; Croguennec, L.; Labrugere, C.; Jordy, C.;

Biensan, Ph.; Delmas, C.

CORPORATE SOURCE: Institut de Chimie de la Matiere Condensee de

Bordeaux, CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I,

Pessac, 33608, Fr.

SOURCE: Journal of the Electrochemical Society (2006), 153(2),

A261-A269

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Layered Li1+x(Ni0.425Mn0.425Co0.15)1-xO2 Positive Electrode Materials for Lithium-Ion Batteries

ST layered cobalt lithium manganese nickel oxide cathode battery

IT Battery cathodes

(layered Li1+x(Ni0.425Mn0.425Co0.15)1-x02 cathode material for lithium-ion batteries)

IT Materials

(layered; layered Lil+x(Ni0.425Mn0.425Co0.15)1-xO2 cathode material for

```
Secondary batteries
ΙT
        (lithium; layered Li1+x(Ni0.425Mn0.425Co0.15)1-x02 cathode material for
        lithium-ion batteries)
TT
     697766-76-0, Cobalt lithium manganese nickel oxide
     (Co0.15LiMn0.42Ni0.42O2)
                                854736-23-5, Cobalt lithium manganese nickel
     oxide (Co0.13Li1.12Mn0.37Ni0.37O2) 881376-10-9, Cobalt lithium
     manganese nickel oxide (Co0.15Li1.03Mn0.41Ni0.41O2)
                                                            881376-11-0, Cobalt
     lithium manganese nickel oxide (Co0.14Li1.1Mn0.38Ni0.38O2)
                                                                    881376-12-1,
     Cobalt lithium manganese nickel oxide (Co0.12Li1.2Mn0.34Ni0.34O2)
     881376-13-2, Cobalt lithium manganese nickel oxide
     (Co0.11Li1.25Mn0.32Ni0.32O2)
                                     881376-14-3, Cobalt lithium manganese
     nickel oxide (Co0.1Li1.33Mn0.28Ni0.28O2)
                                                 881376-15-4, Cobalt lithium
     manganese nickel oxide (Co0.14Li1.08Mn0.39Ni0.39O2) 881376-16-5,
     Cobalt lithium manganese nickel oxide (Co0.15Li0.5Mn0.42Ni0.42O2)
     881376-17-6, Cobalt lithium manganese nickel oxide
     (Co0.15Li0.4Mn0.42Ni0.42O2) 881376-18-7, Cobalt lithium
     manganese nickel oxide (Co0.15Li0.34Mn0.42Ni0.42O2)
                                                            881376-19-8, Cobalt
     lithium manganese nickel oxide (Co0.13Li0.73Mn0.37Ni0.37O2)
                                                                    881376-20-1,
     Cobalt lithium manganese nickel oxide (Co0.13Li0.66Mn0.37Ni0.37O2)
     881376-21-2, Cobalt lithium manganese nickel oxide
     (Co0.13Li0.42Mn0.37Ni0.37O2)
                                     881376-22-3, Cobalt lithium manganese
     nickel oxide (Co0.13Li0.75Mn0.37Ni0.37O2)
     RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (layered Li1+x(Ni0.425Mn0.425Co0.15)1-xO2 cathode material for
        lithium-ion batteries)
     ANSWER 22 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                         2005:1354489 CAPLUS
DOCUMENT NUMBER:
                         144:91105
TITLE:
                         Cathode active mass powder for secondary lithium
                         battery
INVENTOR(S):
                         Mihara, Takuya; Wakasugi, Yukimitsu; Saito, Naoshi;
                         Suhara, Manabu
PATENT ASSIGNEE(S):
                         Seimi Chemical Co., Ltd., Japan
SOURCE:
                         PCT Int. Appl., 30 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
                                            APPLICATION NO.
     PATENT NO.
                         KIND
                                 DATE
                                                                    DATE
                         ____
                                -----
                                            _____
                                                                    -----
                                            WO 2005-JP10819
     WO 2005124898
                          A1
                                 20051229
                                                                    20050613
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ,
             LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,
             NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,
             SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
             ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
             AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
             RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
             MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.:
                                             JP 2004-177884
                                                                 A 20040616
                                                                 A 20040713
                                             JP 2004-206551
REFERENCE COUNT:
                         6
                               THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ΤI
     Cathode active mass powder for secondary lithium battery
ST
     secondary lithium battery cathode lithium transition metal oxide
IT
     Battery cathodes
```

lithium-ion batteries)

(cathodes containing mixts. of different kinds of lithium transition metal composite oxides for secondary lithium batteries)

ΙT 12190-79-3, Cobalt lithium oxide (CoLiO2) 52627-24-4, Cobalt lithium 479258-19-0, Lithium manganese nickel oxide (Lil.05Mn0.5Ni0.502) 500912-67-4, Cobalt lithium manganese nickel oxide (Co0.33Li1.05Mn0.33Ni0.33O2) 872123-89-2, Cobalt lithium manganese nickel oxide (Co0.14Li1.05Mn0.43Ni0.43O2) 872123-90-5, Aluminum lithium manganese oxide (Al0.03Li1.03Mn1.9704) RL: DEV (Device component use); USES (Uses) (cathodes containing mixts. of different kinds of lithium transition metal composite oxides for secondary lithium batteries) L3 ANSWER 23 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2005:1305884 CAPLUS DOCUMENT NUMBER: 144:54376 TITLE: Cathode active mass for secondary nonaqueous lithium battery, its manufacture, and the battery using the active mass INVENTOR(S): Kurita, Fumi; Nakajima, Motoe PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan Jpn. Kokai Tokkyo Koho, 9 pp. SOURCE: CODEN: JKXXAF DOCUMENT TYPE: Patent LANGUAGE: Japanese FAMILY ACC. NUM. COUNT: PATENT INFORMATION: KIND DATE APPLICATION NO. PATENT NO. JP 2005346956 A2 20051215 JP 2004-162152 20040531 PTTY APPI.N. INFO.: JP 2004-162152 20040531 PRIORITY APPLN. INFO.: Cathode active mass for secondary nonaqueous lithium battery, its manufacture, and the battery using the active mass AB The active mass comprise a Li-transition metal composite oxide; where the surface of the composite oxide is modified by a metal compound. The active mass is manufactured by adding the metal compound to the composite oxide during cracking the composite oxide and heat treating. The battery has the above cathode active mass. ST secondary lithium battery cathode lithium transition metal oxide; battery cathode metal compd modification ΙT Battery cathodes (cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries) ΙT Secondary batteries (lithium; cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries) ΙT 193215-50-8P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.602) 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 871466-01-2P 871466-02-3P, Cobalt lithium manganese nickel oxide (Co0.3Li1.1Mn0.25Ni0.4502) RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries) IT 557-04-0, Magnesium stearate 637-12-7, Aluminum stearate RL: MOA (Modifier or additive use); USES (Uses) (cathodes containing metal compds. modified on lithium transition metal composite oxides for secondary lithium batteries) ANSWER 24 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3 ACCESSION NUMBER: 2005:1291965 CAPLUS DOCUMENT NUMBER: 144:24920 TITLE: Lithium secondary battery with high power INVENTOR(S): Park, Hey Woong; Yu, Ji-Sang; Kim, Sung-Woo; Kim, Min Su

SOURCE:

PATENT ASSIGNEE(S):

U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

S. Korea

DOCUMENT TYPE:

Patent English

LANGUAGE:

TΙ AΒ

ST

IT

ΙT

ΙT

IT

TT

L3

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

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KIND DATE APPLICATION NO.
     PATENT NO.
                                                                  DATE
     US 2005271943 A1
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                                20051208 US 2005-91072 20050328
20060112 WO 2005-KR909 20050329
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK,
             LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO,
             NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,
             TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM,
             KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG,
             KZ, MD, RU, TJ, TM
PRIORITY APPLN. INFO.:
                                            KR 2004-21205 A 20040329
     Lithium secondary battery with high power
     The present invention provides a nonag, electrolyte-based high power
     lithium secondary battery having a long-term service life and
     superior safety at both room temperature and high temperature, even after repeated
     high-current charging and discharging, wherein the battery
     comprises a mixture of a particular lithium manganese-metal composite oxide
     having a spinel structure and a particular lithium nickel-manganese-cobalt
     composite oxide having a layered structure, as a cathode active material.
     lithium secondary battery high power; safety lithium secondary
     battery high power
     Secondary batteries
        (lithium; nonaq. electrolyte-based lithium secondary battery
        with high power and superior safety)
     Battery cathodes
     Safety
        (nonaq. electrolyte-based lithium secondary battery with high
        power and superior safety)
     Carbon black, uses
     Fluoropolymers, uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (nonaq. electrolyte-based lithium secondary battery with high
        power and superior safety)
     96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
     7439-93-2, Lithium, uses 9002-88-4, Polyethylene 21324-40-3, Lithium
     hexafluorophosphate 193215-96-2, Cobalt lithium manganese nickel
     oxide (Co0.2LiMn0.4Ni0.4O2) 220025-87-6, Aluminum lithium manganese
     oxide (Al0.05Li1.1Mn1.8504)
                                   220025-92-3, Lithium magnesium manganese
     oxide (Li1.1Mg0.05Mn1.8504)
                                   305365-08-6, Aluminum lithium manganese
     oxide (Al0.05Li1.08Mn1.8704)
                                   346417-97-8, Cobalt lithium manganese
     nickel oxide (Co0.33LiMn0.33Ni0.33O2)
     RL: DEV (Device component use); USES (Uses)
        (nonaq. electrolyte-based lithium secondary battery with high
        power and superior safety)
     24937-79-9, PVDF
     RL: MOA (Modifier or additive use); USES (Uses)
        (nonaq. electrolyte-based lithium secondary battery with high
        power and superior safety)
    ANSWER 25 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2005:1282618 CAPLUS
DOCUMENT NUMBER:
                         144:38299
TITLE:
                         Nickel manganese cobalt oxide, its manufacture, layer
                         structured lithium nickel manganese cobalt oxide, its
                         manufacture cathode active mass for secondary lithium
```

battery, the cathode, and the battery

INVENTOR(S): Shizuka, Kenji

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE JP 2005336004 A2 20051208 JP 2004-156358 20040526
RTTY APPLN. INFO.: JP 2004-156358 20040526 --------------PRIORITY APPLN. INFO.: Nickel manganese cobalt oxide, its manufacture, layer structured lithium nickel manganese cobalt oxide, its manufacture cathode active mass for secondary lithium battery, the cathode, and the battery

The Ni Mg Co oxide, a precursor oxide, is (CCO1-2xNixMnx)304, where X = AB 0.3-0.5 and is prepared by firing a mixture of Ni, Mn, and Co sources between $[(2500/3)x + 400]^{\circ}$ and $[(7000/3)x - 50]^{\circ}$ in an O atmospheric The layer structured Li containing oxide is secondary particles of agglomerated primary Col-2xLil+yNixMnxO2 (y ≤0.2) particles having average diameter standard deviation ≤0.15; and is manufactured by firing a mixture of the precursor oxide and a Li compound between lower temperature and 1100°, where the lower temperature is the higher one of 800° and (3000x-450)°. The layer structured Li containing oxide is used as the cathode active mass, and the secondary Li battery using cathodes containing the active mass.

ST secondary lithium battery cathode cobalt manganese nickel oxide precursor; lithium cobalt manganese nickel oxide manuf battery cathode; particle size lithium cobalt manganese nickel oxide . battery cathode

IT Battery cathodes

> (compns. and manufacture of precursor oxides and layer structure lithium oxides for secondary lithium battery cathodes)

247565-42-0P, Cobalt lithium manganese nickel oxide ΙT (Co0.2Li1.05Mn0.4Ni0.4O2) 477567-62-7P, Cobalt lithium manganese nickel oxide (Co0.1Li1.05Mn0.45Ni0.45O2) 500912-67-4P, Cobalt lithium manganese nickel oxide (Co0.33Li1.05Mn0.33Ni0.33O2) RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

> (compns. and manufacture of layer structure cobalt lithium manganese nickel oxides for secondary lithium battery cathodes)

99627-76-6P, Cobalt manganese nickel oxide (CoMnNiO4) 870827-49-9P, ΙT Cobalt manganese nickel oxide (Co0.6Mn1.2Ni1.2O4) 870827-51-3P, Cobalt manganese nickel oxide (Co0.3Mn1.35Ni1.35O4)

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(compns. and manufacture of precursor oxides for cathode active mass for secondary lithium batteries)

ANSWER 26 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3

ACCESSION NUMBER: 2005:1281192 CAPLUS

DOCUMENT NUMBER: 145:52336

Synthesis and characterization of TITLE:

LiNi0.45Co0.10Mn0.45O2 cathode for lithium ion

batteries

AUTHOR(S): Guo, Hua-jun; Zhang, Ming; Li, Xin-hai; Zhang,

> Xin-ming; Wang, Zhi-xing; Peng, Wen-jie; Hu, Min School of Metallurgical Science and Engineering,

Central South University, Changsha, 410083, Peop. Rep.

China

SOURCE: Transactions of Nonferrous Metals Society of China

(2005), 15(5), 1185-1189 CODEN: TNMCEW; ISSN: 1003-6326

PUBLISHER: Science Press

DOCUMENT TYPE: Journal

CORPORATE SOURCE:

LANGUAGE:

English

REFERENCE COUNT:

16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Synthesis and characterization of LiNi0.45Co0.10Mn0.45O2 cathode for lithium ion batteries

AB LiNio.45Coo.10Mno.45O2 was prepared from Li2CO3 and a triple oxide of Ni, Co and Mn at 950° in air. The structure and characteristics of LiNio.45Coo.10Mno.45O2 were determined by XRD, SEM and electrochem. measurements. The compound LiNio.45Coo.10Mno.45O2 has layered structure with hexagonal lattice. The individual particles are agglomeration of many little primary particles whose size ranges from 100 mm to 200 nm. The LiNio.45Coo.10Mno.45O2 cathode has excellent electrochem. performances with large reversible specific capacity of 142.5 mA h/g between 4.25 V, and good capacity retention of 83.20% after 450 charge/discharge cycles. Capacity of the battery increases with enhancement of charge voltage limit, and a specific discharge capacity of 175.2 mA h/g was obtained when the charge voltage limit is fixed at 4.45 V.

ST synthesis lithium nickel cobalt manganese oxide cathode lithium

T synthesis lithium nickel cobalt manganese oxide cathode lithium battery

IT Secondary batteries

(lithium; synthesis and characterization of LiNi0.45Co0.10Mn0.4502 cathode for lithium ion batteries)

IT Battery electrodes Surface structure

X-ray diffraction

(synthesis and characterization of LiNi0.45Co0.10Mn0.45O2 cathode for lithium ion batteries)

IT 405890-05-3P, Cobalt lithium manganese nickel oxide
 (Co0.1LiMn0.45Ni0.45O2)

RL: DEV (Device component use); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)

(synthesis and characterization of LiNi0.45Co0.10Mn0.45O2 cathode for lithium ion batteries)

IT 554-13-2, Lithium carbonate 37348-84-8, Cobalt manganese nickel oxide RL: RCT (Reactant); RACT (Reactant or reagent)

(synthesis and characterization of LiNi0.45Co0.10Mn0.45O2 cathode for lithium ion batteries)

L3 ANSWER 27 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:

2005:1242925 CAPLUS

DOCUMENT NUMBER:

143:480426

TITLE:

Energy storage device and energy storage device module

for use in an electric car

INVENTOR(S):

Kumashiro, Yoshiaki; Arai, Juichi; Kobayasi, Mituru Japan

PATENT ASSIGNEE(S):

SOURCE:

U.S. Pat. Appl. Publ., 16 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	Ι	DATE	
				-		
US 2005260497	A1	20051124	US 2005-59350	2	20050217	
JP 2005332655	A2	20051202	JP 2004-148854	2	20040519	
PRIORITY APPLN. INFO.:			JP 2004-148854 A	1 2	20040519	

IT Secondary batteries

(lithium; energy storage device and energy storage device module for use in elec. car)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 607706-67-2, Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO2)

RL: DEV (Device component use); USES (Uses)

(energy storage device and energy storage device module for use in elec. car)

L3 ANSWER 28 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2005:1239152 CAPLUS DOCUMENT NUMBER: 144:8986 TITLE: Production of lithium compound oxides having layered crystal structure as cathodes for secondary lithium batteries INVENTOR(S): Hara, Kenji; Hirahata, Shoji; Suzuki, Katsunori PATENT ASSIGNEE(S): Shin-Kobe Electric Machinery Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp. CODEN: JKXXAF DOCUMENT TYPE: Patent Japanese LANGUAGE: FAMILY ACC. NUM. COUNT: PATENT INFORMATION: PATENT NO. KIND DATE APPLICATION NO. ---------_____ -----

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2005327644 A2 20051124 JP 2004-145784 20040517

PRIORITY APPLN. INFO.: JP 2004-145784 20040517

TI Production of lithium compound oxides having layered crystal structure as cathodes for secondary lithium batteries

AB The lithium compound oxides are expressed by LiNiaMnbCocMgdO2 (a > b ≥ c, d = 0.001-0.02, as mol. ratio). The compound oxides are produced by a process comprising steps of (1) producing solvents at least containing (dissolved) Ni compds., Mn compds., Co compds., and Mg compds., (2) copptg. at least Ni, Mn, Co, and Mg, and adding Li compds. to give compound oxide precursors, and (3) firing the precursors. The compds. of each metals may be selected from oxides, hydroxides, nitrates, sulfates, and/or carbonates. Secondary lithium batteries employing the cathodes are also claimed. The cathodes show uniform crystal structure and the batteries provide high output power even at low temperature environment.

ST battery cathode lithium compd oxide manuf; nickel lithium manganese cobalt magnesium oxide battery cathode; copptn manuf lithium compd oxide battery cathode

IT Secondary batteries

(lithium; production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)

IT Carbonates, processes
Hydroxides (inorganic)
Nitrates, processes

Oxides (inorganic), processes

Sulfates, processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(of metals; in production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)

IT Battery cathodes Coprecipitation

L3

(production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)

IT 856700-33-9P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.34O2) 870011-39-5P 870011-40-8P 870011-41-9P 870011-42-0P 870011-75-9P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(cathodes; production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)

IT 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 7487-88-9, Magnesium sulfate, processes 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 10124-43-3, Cobalt sulfate

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(in production of lithium compound oxides having layered crystal structure as secondary lithium battery cathodes)

ACCESSION NUMBER: 2005:1226940 CAPLUS

TITLE: Origin of the irreversible plateau (4.5V) of

Li[Li0.182Ni0.182Co0.091Mn0.545]02 layered material AUTHOR(S): Gan, Chaolun; Zhan, Hui; Hu, Xiaohong; Zhou, Yunhong

CORPORATE SOURCE: Department of Chemistry, Wuhan University, Hubei,

Wuhan, 430072, Peop. Rep. China

SOURCE: Electrochemistry Communications (2005), 7(12),

1318-1322

CODEN: ECCMF9; ISSN: 1388-2481

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS 16

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

cobalt lithium manganese nickel oxide cathode irreversible plateau

battery

INDEXING IN PROGRESS ΙT

INDEXING IN PROGRESS IT

IT Secondary batteries

(lithium; origin of irreversible plateau at 4.5 V of

Li[Li0.182Ni0.182Co0.091Mn0.545]O2 layered cathode material for lithium batteries)

Battery cathodes IT

(origin of irreversible plateau at 4.5 V of

Li[Li0.182Ni0.182Co0.091Mn0.545]O2 layered cathode material for lithium batteries)

193215-96-2, Cobalt lithium manganese nickel oxide ΙT

(Co0.2LiMn0.4Ni0.402) 388587-53-9, Lithium manganese oxide

(Li1.33Mn0.6702)

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(origin of irreversible plateau at 4.5 V of

Li[Li0.182Ni0.182Co0.091Mn0.545]02 layered cathode material for lithium batteries)

ANSWER 30 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

2005:1198712 CAPLUS ACCESSION NUMBER:

DOCUMENT NUMBER: 143:443610

TITLE: Energy storage devices and energy storage device

modules

Kumashiro, Yoshiaki; Arai, Juichi; Kobayasi, Mituru INVENTOR(S):

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 15 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent English

LANGUAGE: FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE		
				-			
US 2005250014	A1	20051110	US 2005-60478		20050218		
JP 2005322420	A2	20051117	JP 2004-136973		20040506		
CN 1694297	Α	20051109	CN 2005-10004381		20050120		
PRIORITY APPLN. INFO.:			JP 2004-136973	Α	20040506		
			•				

ST energy storage device module; lithium battery

IΤ Secondary batteries

(lithium; energy storage devices and energy storage device modules)

ΙT 7440-44-0, Carbon, uses 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 607706-67-2, Cobalt lithium

manganese nickel oxide ((Co, Mn, Ni) LiO2)

RL: DEV (Device component use); USES (Uses)

(energy storage devices and energy storage device modules)

ANSWER 31 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1174996 CAPLUS

DOCUMENT NUMBER: 143:443512 TITLE:

Lithium mixed oxide cathode active materials for

nonaqueous secondary lithium batteries,

method for their manufacture, and nonaqueous secondary

lithium batteries

INVENTOR(S):

Inada, Fumi; Nakajima, Motoe Hitachi Metals, Ltd., Japan

PATENT ASSIGNEE(S): SOURCE:

Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

KIND DATE APPLICATION NO. DATE PATENT NO. JP 2005310744 A2 20051104 JP 2004-376870 20041227 APPLN. INFO.: JP 2004-86962 A 20040324 _____ PRIORITY APPLN. INFO.:

- Lithium mixed oxide cathode active materials for nonaqueous secondary lithium batteries, method for their manufacture, and nonaqueous secondary lithium batteries
- AΒ The cathode active materials consist of Li transition metal mixed oxide particles having their surfaces modified with 10-70 nm-thick metal compound layers containing ≥ 1 of Al, Mg, Sn, Ti, Zn, and Zr. The oxide particles may have composition formula LiaMnxNiyMzO2 (M = Co and/or Al; a = 1-1.2; x = 0-0.65; y = 0.35-1; z = 0-0.65; x + y + z = 1) and layer crystal structure. Method for manufacture of the active materials includes preparation of Li transition metal mixed oxide, followed by its surface modification by mixing the oxide with a solvent containing metal compds. and its treatment by irradiation with ultrasonic wave. Further specified conditions for the manufacturing processes, including granulation and heat treatment are also given. Nonaq. Li secondary batteries with cathodes comprising the claimed cathode active materials are also claimed. Batteries showing high power output are obtained.
- ST lithium transition metal mixed oxide battery cathode; metal coated lithium mixed oxide battery cathode; nonag secondary lithium battery mixed oxide cathode
- ΙT Sol-gel processing

(coating; formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)

IT Battery cathodes

> (formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)

IT Coating process

> (sol-gel; formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonag. secondary lithium batteries)

ΙT 193215-96-2P, Cobalt lithium manganese nickel oxide

(Co0.2LiMn0.4Ni0.4O2) 247565-43-1P, Lithium manganese nickel oxide (Li1.05Mn0.3Ni0.7O2) 868657-81-2P, Cobalt lithium manganese nickel oxide (Co0.31Li1.1Mn0.31Ni0.3802) 868657-82-3P

RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)

IT 2414-98-4, Magnesium diethoxide 3087-36-3, Titanium tetraethoxide 3173-69-1, Tin tetraethoxide 4073-85-2, Aluminum tripropoxide 13963-57-0 14024-63-6 23519-77-9, Zirconium tetrapropoxide RL: RCT (Reactant); RACT (Reactant or reagent)

(metal compound coatings from; formation of metal compound coatings on lithium transition metal mixed oxide cathode active materials for nonaq. secondary lithium batteries)

```
64-17-5, Ethanol, uses 67-63-0, 2-Propanol, uses 7732-18-5, Water,
TΤ
     RL: NUU (Other use, unclassified); USES (Uses)
        (solvent; formation of metal compound coatings on lithium transition
        metal mixed oxide cathode active materials for nonaq. secondary lithium
        batteries)
     ANSWER 32 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                       2005:1171090 CAPLUS
DOCUMENT NUMBER:
                        143:443499
TITLE:
                        Layered lithium nickel manganese cobalt composite
                         oxide powder for secondary lithium battery
                         cathode material, its manufacture, cathode for the
                         battery, and the battery
INVENTOR(S):
                         Shizuka, Kenji; Okahara, Kenji
PATENT ASSIGNEE(S):
                        Mitsubishi Chemical Corporation, Japan
SOURCE:
                         PCT Int. Appl., 42 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
                        KIND DATE APPLICATION NO.
     PATENT NO.
                                         _____
                                                                 -----
     _____
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                               -----
    WO 2005104274
                               20051103 WO 2005-JP8047 20050427
                        A1
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP, KR, KZ, LC,
             LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
             NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,
             SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
             AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
             EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
             RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
             MR, NE, SN, TD, TG
                                           JP 2005-128153 20050426
JP 2004-131599 A 20040427
                        A2 20051208
     JP 2005340186
                                                                  20050426
PRIORITY APPLN. INFO.:
                              THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
REFERENCE COUNT:
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ΤI
     Layered lithium nickel manganese cobalt composite oxide powder for
     secondary lithium battery cathode material, its manufacture,
     cathode for the battery, and the battery
     The title oxide powder has a composition represented by: Li1+zNixMnyCo1-x-
AB
     y08 (0<z\le0.91; x = 0.1-0.55; y = 0.20-0.90; x+y = 0.5-1; and
     \delta = 1.9-3), a volume resistivity material of \leq 5+105
     \Omega \cdot \text{cm.} at compaction under a pressure of 40 MPa, and a ratio
     of C content (weight%) to BET sp. surface area (m2/g) \le 0.025; and is
     manufactured by preparing an evenly dispersed slurry by pulverizing a Ni compound, a
     Mn compound and a Co compound in a liquid medium to have average particle size
     ≤0.3 µm; spray drying the slurry, coagulating primary particles
     to form secondary particles as powder; completely mixing the obtained
     powder with a Li compound; firing the mixture in an O-containing gas atmospheric The
     cathode has a cathode active mass layer, containing the above composite oxide
     powder, on a collector. The battery has a Li-intercalating
     anode, a nonaq. electrolyte containing a Li salt, and the above cathode.
ST
     secondary battery cathode lithium nickel cobalt manganese oxide
     manuf
IT
     Battery cathodes
        (compns., characteristics and manufacture of lithium nickel manganese cobalt
        composite oxides for secondary lithium batteries)
IT
     Secondary batteries
        (lithium; compns., characteristics and manufacture of lithium nickel
        manganese cobalt composite oxides for secondary lithium
        batteries)
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ΙT
     96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 623-53-0,
     Ethyl methyl carbonate 7782-42-5, Graphite, uses 21324-40-3, Lithium
    hexafluorophosphate
     RL: DEV (Device component use); USES (Uses)
        (compns., characteristics and manufacture of lithium nickel manganese cobalt
        composite oxides for secondary lithium batteries)
     807654-92-8P, Cobalt lithium manganese nickel oxide
ΙT
     (Co0.2Li1.06Mn0.4Ni0.402)
                                868658-11-1P, Cobalt lithium manganese nickel
     oxide (Co0.34Lil.09Mn0.33Ni0.33O2)
     RL: DEV (Device component use); IMF (Industrial manufacture); PREP
     (Preparation); USES (Uses)
        (compns., characteristics and manufacture of lithium nickel manganese cobalt
        composite oxides for secondary lithium batteries)
ΙT
     1310-65-2, Lithium hydroxide 1317-35-7, Manganese oxide (Mn304)
     12054-48-7, Nickel hydroxide (Ni(OH)2) 21041-93-0, Cobalt hydroxide
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (compns., characteristics and manufacture of lithium nickel manganese cobalt
        composite oxides for secondary lithium batteries)
    ANSWER 33 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2005:1130978 CAPLUS
DOCUMENT NUMBER:
                        143:408199
TITLE:
                        Secondary nonaqueous electrolyte battery
INVENTOR(S):
                        Deguchi, Masaki; Matsui, Tooru; Yoshizawa, Hiroshi
                     . Matsushita Electric Industrial Co., Ltd., Japan
PATENT ASSIGNEE(S):
                        PCT Int. Appl., 20 pp.
                        CODEN: PIXXD2
DOCUMENT TYPE:
                        Patent
                        Japanese
LANGUAGE:
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
                               DATE APPLICATION NO.
     PATENT NO.
                        KIND
                                                                 DATE
                                        ______
                                                                -----
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                               -----
    WO 2005099022
                               20051020 WO 2005-JP4655 20050316
                        A1
        W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
            CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
            GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
            LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
            NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,
            SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
            AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
            EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
            RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
            MR, NE, SN, TD, TG
                               20060719
                                           CN 2005-80000503
    CN 1806362
                         Α
                                                                  20050316
    US 2006083988
                         Α1
                                           US 2005-287446
                               20060420
                                                                  20051128
PRIORITY APPLN. INFO.:
                                           JP 2004-113208
                                                               A 20040407
                                           WO 2005-JP4655
                                                               A2 20050316
REFERENCE COUNT:
                        16
                              THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
                              RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
TΙ
    Secondary nonaqueous electrolyte battery
AB
    The battery comprises a separator between a Li-intercalating
    cathode and a Li-intercalating anode and a nonag. electrolyte solution; where
    the cathode contains. The pos. electrode contains a composite oxide:
    LiNixM1-x-yLyO2 (x = 0.3-0.9; y = 0-0.1; M = Co and/or Mn; and L = Mg, Al,
    Ti, Sr, Zn, B, Ca, Cr, Si, Ga, Sn, P, V, Sb, Nb, Ta, Mo, W, Zr, Y, and/or
    Fe) as an active mass; and the electrolyte solution contains a main solvent,
    an electrolyte salt, and vinyl ethylene carbonate.
ST
    secondary battery cathode lithium nickel composite oxide;
    battery electrolyte vinyl ethylene carbonate
ΙT
    Battery cathodes
      Battery electrolytes
        (cathode containing lithium nickel composite oxides and electrolytes containing
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IT
     Secondary batteries
        (lithium; cathode containing lithium nickel composite oxides and
        electrolytes containing vinyl ethylene carbonate for secondary lithium
        batteries)
IT
                                  105-58-8, Diethyl carbonate
                                                                  623-53-0,
     96-49-1, Ethylene carbonate
                             7782-42-5, Graphite, uses
                                                          12190-79-3, Cobalt
     Ethyl methyl carbonate
                              21324-40-3, Lithium hexafluorophosphate
     lithium oxide (CoLiO2)
     101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.502)
                                                                113066-90-3,
     Cobalt lithium nickel oxide (Co0.6LiNi0.402)
                                                    116327-68-5, Cobalt lithium
                                     116327-69-6, Cobalt lithium nickel oxide
     nickel oxide (Co0.3LiNi0.702)
                        118557-81-6, Cobalt lithium nickel oxide
     (Co0.1LiNi0.902)
     (Co0.7LiNi0.302)
                        128975-24-6, Lithium manganese nickel oxide
     (LiMn0.5Ni0.502)
                        143623-49-8, Cobalt lithium nickel oxide
     (Co0.25LiNi0.7502)
                          179186-41-5, Lithium manganese nickel oxide
     (LiMn0.7Ni0.302)
                        193214-24-3, Aluminum cobalt lithium nickel oxide
     (Al0.05Co0.15LiNi0.802) 193215-92-8, Cobalt lithium manganese
     nickel oxide (Co0.1LiMn0.4Ni0.502)
                                          195880-90-1, Cobalt lithium magnesium
     nickel oxide (Co0.15LiMg0.05Ni0.802)
                                           203005-76-9, Cobalt lithium nickel
     borate oxide (Co0.15LiNi0.8(BO3)0.0501.85)
                                                  216385-46-5, Cobalt lithium
     nickel tin oxide (Co0.15LiNi0.8Sn0.0502)
                                                216385-49-8, Cobalt lithium
     nickel oxide silicate (Co0.15LiNi0.801.8(SiO4)0.05)
                                                            216385-50-1, Cobalt
     iron lithium nickel oxide (Co0.15Fe0.05LiNi0.802)
                                                         216385-51-2, Cobalt
     lithium nickel titanium oxide (Co0.15LiNi0.8Ti0.0502)
     Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)
     849416-68-8, Cobalt lithium nickel niobium oxide (Co0.15LiNi0.8Nb0.0502)
     859529-03-6, Cobalt gallium lithium nickel oxide (Co0.15Ga0.05LiNi0.802)
     867248-92-8, Cobalt lithium nickel strontium oxide (Co0.15LiNi0.8Sr0.0502)
     867248-93-9, Cobalt lithium nickel zinc oxide (Co0.15LiNi0.8Zn0.0502)
     867248-94-0, Calcium cobalt lithium nickel oxide (Ca0.05Co0.15LiNi0.802)
     867248-95-1, Chromium cobalt lithium nickel oxide (Cr0.05Co0.15LiNi0.802)
     867248-96-2, Cobalt lithium nickel oxide phosphate
     (Co0.15LiNi0.801.8(PO4)0.05)
                                    867248-97-3, Cobalt lithium nickel vanadium
     oxide (Co0.15LiNi0.8V0.0502)
                                    867248-98-4, Antimony cobalt lithium nickel
     oxide (Sb0.05Co0.15LiNi0.802)
                                     867248-99-5, Cobalt lithium nickel
     tantalum oxide (Co0.15LiNi0.8Ta0.0502)
                                              867249-00-1, Cobalt lithium
     molybdenum nickel oxide (Co0.15LiMo0.05Ni0.802)
                                                       867249-01-2, Cobalt
     lithium nickel zirconium oxide (Co0.15LiNi0.8Zr0.0502)
                                                               867249-02-3,
     Cobalt lithium nickel yttrium oxide (Co0.15LiNi0.8Y0.0502)
                                                                  867249-03-4
     867249-04-5
                   867249-05-6
                                 867249-06-7
     RL: DEV (Device component use); USES (Uses)
        (cathode containing lithium nickel composite oxides and electrolytes containing
        vinyl ethylene carbonate for secondary lithium batteries)
IT
     4427-96-7, Vinyl ethylene carbonate
     RL: MOA (Modifier or additive use); USES (Uses)
        (cathode containing lithium nickel composite oxides and electrolytes containing
        vinyl ethylene carbonate for secondary lithium batteries)
L3
     ANSWER 34 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2005:1084511 CAPLUS
DOCUMENT NUMBER:
                         144:215940
TITLE:
                         Synthesis of Li[Ni0.475Co0.05Mn0.475]02 cathode
                         materials via a carbonate process
AUTHOR(S):
                         Shin, H.-S.; Park, S.-H.; Bae, Y. C.; Sun, Y.-K.
CORPORATE SOURCE:
                         Department of Chemical Engineering, Center for
                         Information and Communication Materials, Hanyang
                         University, Seoul, 133-791, S. Korea
SOURCE:
                         Solid State Ionics (2005), 176(35-36), 2577-2581
                         CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER:
                         Elsevier B.V.
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
REFERENCE COUNT:
                         19
                               THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ST
     cobalt lithium manganese nickel oxide cathode carbonate synthesis
```

battery

vinyl ethylene carbonate for secondary lithium batteries)

ITBattery cathodes (synthesis of Li[Ni0.475Co0.05Mn0.475]02 cathode material for lithium batteries through carbonate copptn.) IT 876048-08-7, Cobalt manganese nickel carbonate (Co0.05Mn0.48Ni0.48(CO3)) RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process) (in synthesis of Li[Ni0.475Co0.05Mn0.475]02 cathode material for lithium batteries through carbonate copptn.) IΤ 459408-76-5P, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.4802) RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (synthesis of Li[Ni0.475Co0.05Mn0.475]02 cathode material for lithium batteries through carbonate copptn.) IT 7732-18-5, Water, uses RL: TEM (Technical or engineered material use); USES (Uses) (synthesis of Li[Ni0.475Co0.05Mn0.475]02 cathode material for lithium batteries through carbonate copptn.) ANSWER 35 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2005:1078019 CAPLUS DOCUMENT NUMBER: 143:369996 TITLE: Nonaqueous electrolyte secondary battery Takeuchi, Masanobu; Yoshimura, Seiji INVENTOR(S): Sanyo Electric Co., Ltd., Japan PATENT ASSIGNEE(S): SOURCE: U.S. Pat. Appl. Publ., 13 pp. CODEN: USXXCO DOCUMENT TYPE: Patent English LANGUAGE: FAMILY ACC. NUM. COUNT: PATENT INFORMATION: KIND DATE APPLICATION NO. PATENT NO. DATE ------------------------US 2005221170 A1 20051006 US 2005-90002 20050328 PRIORITY APPLN. INFO.: JP 2004-100864 A 20040330 A 20050223 JP 2005-47671 ΤI Nonaqueous electrolyte secondary battery AB A non-aqueous electrolyte secondary battery includes a pos. electrode, a neg. electrode, and a nonag. electrolyte, and the neg. electrode contains a conductive agent and a neg. electrode active material including a lithium titanium oxide. The conductive agent in the neg. electrode includes graphitized vapor grown carbon fiber having a lattice constant CO along a stacking direction of from 6.7 Å to 6.8 Å, as determined by X-ray diffraction. STnonag electrolyte secondary battery IΤ Carbon fibers, uses RL: MOA (Modifier or additive use); USES (Uses) (graphite; nonaq. electrolyte secondary battery) ΙT Battery anodes Secondary batteries (nonaq. electrolyte secondary battery) Carbonaceous materials (technological products) IT RL: MOA (Modifier or additive use); USES (Uses) (nonaq. electrolyte secondary battery) IT 12031-95-7, Lithium titanium oxide (Li4Ti5012) 12190-79-3, Cobalt lithium oxide (CoLiO2) 346417-97-8, Cobalt lithium manganese nickel 390362-01-3, Cobalt lithium manganese oxide (Co0.33LiMn0.33Ni0.33O2) nickel oxide (Co0.5LiMn0.25Ni0.25O2) 686740-96-5, Cobalt lithium manganese nickel oxide (Co0.67LiMn0.17Ni0.17O2) 866090-48-4, Cobalt lithium manganese nickel oxide (Co0-1LiMn0-0.5Ni0-102) RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte secondary battery)

L3 ANSWER 36 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2005:1049245 CAPLUS

DOCUMENT NUMBER: 143:349929 TITLE: Mixed oxide blends for nonaqueous electrolyte secondary battery cathode materials and nonaqueous electrolyte secondary batteries INVENTOR(S): Baba, Yasunori; Kitao, Hideki; Nakanishi, Naoya; Ikemachi, Takaaki; Noma, Toshiyuki Sanyo Electric Co., Ltd., Japan PATENT ASSIGNEE(S): Jpn. Kokai Tokkyo Koho, 10 pp. SOURCE: CODEN: JKXXAF DOCUMENT TYPE: Patent LANGUAGE: Japanese FAMILY ACC. NUM. COUNT: PATENT INFORMATION: PATENT NO. KIND DATE APPLICATION NO. DATE ____ _____ JP 2005267956 A2 20050929 JP 2004-76417 20040317 JP 2004-76417 PRIORITY APPLN. INFO.: Mixed oxide blends for nonaqueous electrolyte secondary battery cathode materials and nonaqueous electrolyte secondary batteries Mixts. of LiNil-x-yCoxMnyO2 (0.5 < x + y <1.0; 0.1 < y < 0.6) containing F and AB spinel-structured Li(1+a)Mn2-a-bMbO4 (M = Al, Co, Ni, Mg, and/or Fe; a = 0-0.2; b = 0-0.1), preferably in 20:80-30:20 weight ratio, are claimed as the title cathode material. Nonaq. electrolyte secondary batteries including the said cathode materials are also claimed. The cathode materials are thermally stable. STmixed oxide blend nonaq electrolyte secondary battery cathode; spinel structure lithium manganese mixed oxide cathode; fluorine contg lithium nickel cobalt manganese oxide cathode ΙT Battery cathodes (mixture of F-containing Li(Ni,Co,Mn)O2 and spinel-type lithium manganese mixed oxides for cathode in nonaq. electrolyte secondary batteries) Secondary batteries IT (nonaq. electrolyte; mixture of F-containing Li(Ni,Co,Mn)O2 and spinel-type lithium manganese mixed oxides for cathode in nonaq. electrolyte secondary batteries) 865627-10-7, Cobalt lithium manganese nickel oxide ΙT (Co0-0.9LiMn0.1-0.6Ni0-0.502) RL: DEV (Device component use); USES (Uses) (F-containing; mixture of F-containing Li(Ni,Co,Mn)O2 and spinel-type lithium manganese mixed oxides for cathode in nonaq. electrolyte secondary batteries) 865627-09-4P, Cobalt lithium manganese nickel oxide IT (Co0.33Li1.03Mn0.34Ni0.3302) RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (F-containing; mixture of F-containing Li(Ni,Co,Mn)O2 and spinel-type lithium manganese mixed oxides for cathode in nonaq. electrolyte secondary batteries) 7782-41-4, Fluorine, uses TΤ RL: MOA (Modifier or additive use); USES (Uses) (cobalt lithium manganese nickel oxide containing; mixture of F-containing Li(Ni,Co,Mn)O2 and spinel-type lithium manganese mixed oxides for cathode in nonaq. electrolyte secondary batteries) IΤ 737006-34-7P RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses) (mixture of F-containing Li(Ni,Co,Mn)O2 and spinel-type lithium manganese mixed oxides for cathode in nonag, electrolyte secondary batteries) 865627-08-3, Aluminum lithium manganese oxide (Al0.04Lil.1Mnl.8802) IT RL: DEV (Device component use); USES (Uses) (spinel-structured; mixture of F-containing Li(Ni,Co,Mn)O2 and spinel-type

lithium manganese mixed oxides for cathode in nonaq. electrolyte

secondary batteries)

L3 ANSWER 37 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1049231 CAPLUS

DOCUMENT NUMBER: 143:349928

TITLE: Nonaqueous electrolyte secondary batteries

with lithium mixed oxide cathodes

INVENTOR(S): Matsui, Toru; Deguchi, Masaki; Yoshizawa, Hiroshi PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005267911	A2	20050929	JP 2004-75110	20040316
PRIORITY APPLN. INFO.:			JP 2004-75110	20040316

TI Nonaqueous electrolyte secondary batteries with lithium mixed oxide cathodes

AB The batteries comprise cathodes including LiAO2 (A is ≥2 selected from Mn, Co, and Ni) or LiB1-wCwO2 (B = Mn, Co, and/or Ni; C = Mg, Ca, Sr, Al, and/or Ga; w = 0.005-0.1) as active materials, anodes, and nonaq. electrolytes including a main solvent, solute, and diallyl carbonate as additive. The electrolytes may also contain vinylene carbonate as additive. The batteries show excellent cycle performance and prevented emission of gases at high temperature

ST nonaq electrolyte secondary battery lithium mixed oxide cathode; diallyl carbonate nonaq electrolyte additive secondary battery

IT Secondary batteries

(secondary batteries with lithium mixed oxide cathodes and nonag. electrolytes containing diallyl carbonate as additives) IT 101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.502) 113066-89-0, Cobalt lithium nickel oxide (Co0.2LiNi0.802) 118819-08-2, Cobalt lithium manganese oxide (Co0.5LiMn0.502) 128975-24-6, Lithium manganese nickel 142447-10-7, Cobalt lithium manganese oxide oxide (Li2MnNiO4) (Co0.75LiMn0.2502) 143623-49-8, Cobalt lithium nickel oxide 144419-56-7, Cobalt lithium magnesium oxide (Co0.25LiNi0.7502) (Co0.95LiMq0.0502) 149319-02-8, Cobalt lithium nickel oxide 152066-41-6, Cobalt lithium manganese nickel oxide (Co0.75LiNi0.2502) (Co0.45LiMn0.1Ni0.4502) 193214-25-4, Aluminum cobalt lithium nickel oxide (Al0.05Co0.2LiNi0.7502) 193214-39-0, Aluminum cobalt lithium nickel oxide (Al0.1Co0.2LiNi0.702) 193214-51-6, Aluminum cobalt lithium nickel oxide (Al0.15Co0.2LiNi0.6502) 197389-21-2, Aluminum lithium 198213-70-6, Cobalt lithium magnesium nickel oxide (Al0.03LiNi0.9702) oxide (Co0.98LiMg0.0202) 200938-46-1, Lithium manganese nickel oxide (Li2Mn1.5Ni0.504) 225662-79-3, Aluminum cobalt lithium nickel oxide (Al0.01Co0.2LiNi0.7902) 248581-94-4, Cobalt lithium manganese oxide (Co0.5Li2Mn1.504) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 459409-01-9, Aluminum cobalt 659718-68-0, Aluminum cobalt lithium lithium oxide (Al0.02Co0.98LiO2) nickel oxide (Al0.03Co0.2LiNi0.7702) 781672-36-4, Lithium manganese nickel oxide (LiMn0.25Ni0.7502) 865649-43-0, Cobalt lithium manganese nickel oxide (Co0.45LiMn0.45Ni0.102) 865649-44-1, Calcium cobalt lithium 865649-45-2, Cobalt lithium strontium oxide oxide (Ca0.02Co0.98LiO2) (Co0.98LiSr0.0202) 865649-46-3, Cobalt gallium lithium oxide 865649-47-4, Gallium lithium nickel oxide (Co0.98Ga0.02LiO2) 865649-48-5 865649-49-6, Aluminum cobalt lithium (Ga0.03LiNi0.9702) nickel oxide (Al0.07Co0.2LiNi0.7302) 865649-50-9, Aluminum cobalt lithium nickel oxide (Al0.12Co0.2LiNi0.6802) RL: DEV (Device component use); TEM (Technical or engineered material

```
use); USES (Uses)
        (cathode active material; secondary batteries with lithium
       mixed oxide cathodes and nonaq. electrolytes containing diallyl carbonate
        as additives)
IT
     872-36-6, Vinylene carbonate
                                    15022-08-9, Diallyl carbonate
     RL: DEV (Device component use); MOA (Modifier or additive use); USES
     (Uses)
        (electrolyte additive; secondary batteries with lithium mixed
        oxide cathodes and nonaq. electrolytes containing diallyl carbonate as
        additives)
     96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
                                                                 623-53-0,
IT
     Ethyl methyl carbonate
     RL: DEV (Device component use); TEM (Technical or engineered material
     use); USES (Uses)
        (electrolyte solvent; secondary batteries with lithium mixed
        oxide cathodes and nonaq. electrolytes containing diallyl carbonate as
        additives)
IT
     21324-40-3, Lithium hexafluorophosphate
     RL: DEV (Device component use); TEM (Technical or engineered material
     use); USES (Uses)
        (electrolyte; secondary batteries with lithium mixed oxide
        cathodes and nonag. electrolytes containing diallyl carbonate as additives)
     ANSWER 38 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2005:1042973 CAPLUS
DOCUMENT NUMBER:
                         144:471234
                         Development of secondary lithium battery
TITLE:
                         "EX25A" using cathode active mass of LiCoxMnyNizO2 (x
                         + y + z = 1
AUTHOR(S):
                         Iguchi, Takaaki; Okamoto, Katsuhiko; Kuratomi,
                         Junichi; Ohkawa, Kouji; Kohno, Kenji; Izuchi, Shuichi
CORPORATE SOURCE:
                         GS Yuasa Technical Report (2004), 1(1), 25-31
SOURCE:
                         CODEN: GYTRA8; ISSN: 1349-7618
                         URL: http://www.gs-yuasa.com/jp/technic/no1/pdf/001 1
                         025.pdf
                         GS Yuasa Corp.
PUBLISHER:
DOCUMENT TYPE:
                         Journal; (online computer file)
                         Japanese
LANGUAGE:
     Development of secondary lithium battery "EX25A" using cathode
ΤI
     active mass of LiCoxMnyNizO2 (x + y + z = 1)
     The 25 Ah secondary lithium battery "EX25A" with high
AB
     performance has been developed using a new LiCoxMnyNizO2 (x + y + z = 1)
     cathode active mass for industrial applications. This material is
     uniformly crystallized and is able to be synthesized by firing a precursor of a
     Co-Mn-Ni composite hydroxide produced by reactive crystallization and a Li source
     material resulting in the superior high rate performance and longer life
     for the cathode active material for the battery. The
     battery is able to be charged up to 90% capacity at 5 CA within 15
     min and the discharge capacity at 5 CA is \geq95 % of that of 0.2 CA.
     The maximum output power at 30 s is 2,500 W, 1,800 W kg-1 at the condition
     SOC 100%. The value of capacity retention after 3000 cycles at 45°
     and after stored for 10 years at 100% SOC at 25° is 70% and 60%,
           The battery will be therefore suitable for the industrial
     applications which strongly demand rapid charge, high power and long life.
ST
     secondary battery cathode lithium cobalt manganese nickel oxide
IT
     Battery cathodes
        (development of secondary lithium batteries containing lithium
        cobalt manganese nickel oxides as cathode active mass)
ΙT
     Secondary batteries
        (lithium; development of secondary lithium batteries containing
        lithium cobalt manganese nickel oxides as cathode active mass)
ΙT
     12057-17-9, Lithium manganese oxide (LiMn2O4)
                                                     12190-79-3, Cobalt lithium
     oxide (CoLiO2)
                      346417-97-8, Cobalt lithium manganese nickel oxide
     (Co0.33LiMn0.33Ni0.33O2) 532934-40-0, Cobalt lithium manganese
     nickel oxide (Co0.16LiMn0.42Ni0.42O2)
                                             686740-96-5, Cobalt lithium
```

manganese nickel oxide (Co0.67LiMn0.17Ni0.17O2)

RL: DEV (Device component use); USES (Uses)

(development of secondary lithium batteries containing lithium

cobalt manganese nickel oxides as cathode active mass)

L3 ANSWER 39 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1002629 CAPLUS

DOCUMENT NUMBER: 144:91021

TITLE: Electrochemical performance of layered

Li[NixCol-2xMnx]O2 cathode materials synthesized by a

sol-gel method

AUTHOR(S): Chen, Ching-Hsiang; Wang, Chih-Jen; Hwang, Bing-Joe

CORPORATE SOURCE: Nanoelectrochemistry Laboratory, Department of

Chemical Engineering, National Taiwan University of

Science and Technology, Taipei, 106, Taiwan

SOURCE: Journal of Power Sources (2005), 146(1-2), 626-629

CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST layered cobalt lithium manganese nickel oxide cathode lithium

battery

IT Battery cathodes Sol-qel processing

(layered Li[NixCol-2xMnx]O2 cathode material for lithium

batteries synthesized by sol-gel processing)

IT Materials

(layered; layered Li[NixCol-2xMnx]O2 cathode material for lithium batteries synthesized by sol-gel processing)

IT Secondary batteries

(lithium; layered Li[NixCol-2xMnx]02 cathode material for lithium

batteries synthesized by sol-gel processing)

IT 128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.502)

193215-96-2P, Cobalt lithium manganese nickel oxide

(Co0.2LiMn0.4Ni0.4O2) 346417-97-8P, Cobalt lithium manganese nickel

oxide (Co0.33LiMn0.33Ni0.33O2) 405890-05-3P, Cobalt lithium

manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 468772-63-6P, Cobalt

lithium manganese nickel oxide (Co0.25LiMn0.38Ni0.38O2)

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic

preparation); PREP (Preparation); USES (Uses)

(layered Li[NixCo1-2xMnx]O2 cathode material for lithium

batteries synthesized by sol-gel processing)

L3 ANSWER 40 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1002625 CAPLUS

DOCUMENT NUMBER: 144:91017

TITLE: Effect of cathode structure on cell performance in

wireless charging process

AUTHOR(S): Hu, Shao-Kang; Chou, Tse-Chuan; Hwang, Bing-Joe

CORPORATE SOURCE: Department of Chemical Engineering, National Cheng

Kung University, Tainan, 701, Taiwan

SOURCE: Journal of Power Sources (2005), 146(1-2), 606-610

CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB The application of micro-systems that contain monitoring or actuating devices is often hampered by energy supply. For systems with low power demand the use of an implanted battery or inductive links for wireless energy transfer to the remote system is a solution. However, these energy systems are limited by energy shortage and inductive coil alignment. The misalignment of wireless energy transfer loops results in

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poor energy transfer efficiency and inexact induced potential.
     implanted battery offers a stable energy supply, but energy
     storage in a battery is limited. A wireless microwave charging
     module was developed to overcome the disadvantages of these methods. A
     wireless microwave charging module can charge an implanted Li-ion
     battery at a suitable distance by tuning the power input. Such an
     implanted Li-ion battery has good cycleability after 20 cycles
     of wireless charging. Although the energy conversion of wireless
     microwave charging is only 2-5%, it can be improved by using other designs
     of antenna (microwave generation component) and rectifying antennas
     (receive and conversion components). The performance of spinel-type
     compds. for wireless energy transfer is better than that of layered
     compds.
     cathode structure wireless microwave charging lithium battery
     Battery cathodes
     Microwave
        (effect of crystal structure of cathode material on battery
        performance in wireless microwave charging)
     Secondary batteries
        (lithium; effect of crystal structure of cathode material on
        battery performance in wireless microwave charging)
     12057-17-9, Lithium manganese oxide (LiMn204) 405890-05-3,
     Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.4502)
     RL: DEV (Device component use); USES (Uses)
        (cathode; effect of crystal structure of cathode material on
        battery performance in wireless microwave charging)
     ANSWER 41 OF 133
                        CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                          2005:1002623 CAPLUS
DOCUMENT NUMBER:
                          144:394500
TITLE:
                          Synthesis of (1-2x)LiNi1/2Mn1/2O2·xLi[Li1/3Mn2/
                          3|02 \cdot xLiCoO2 \ (0 \le x \le 0.5)
                          electrode materials and comparative study on cooling
AUTHOR(S):
                          Zhang, Lianqi; Takada, Kazunori; Ohta, Narumi; Fukuda,
                          Katsutoshi; Sasaki, Takayoshi
CORPORATE SOURCE:
                          Advanced Materials Laboratory, National Institute for
                          Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SOURCE:
                          Journal of Power Sources (2005), 146(1-2), 598-601
                          CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER:
                          Elsevier B.V.
DOCUMENT TYPE:
                          Journal
LANGUAGE:
                          English
REFERENCE COUNT:
                          16
                                 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
                                 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     cobalt lithium manganese nickel oxide cathode synthesis lithium
     Battery cathodes
     Cooling
        (effect of cooling rate in synthesis of (1-
        2x) \text{LiNi} \frac{1}{2} \text{Mn} \frac{1}{2} \text{O} \cdot x \text{Li} \left[ \frac{\text{Li} \frac{1}{3} \text{Mn} \frac{2}{3}}{3} \right] \text{O} \cdot x \text{LiCoO2} \quad (0 \le x)
        ≤0.5) cathode material for lithium batteries)
     Secondary batteries
        (lithium; effect of cooling rate in synthesis of (1-
        2x)LiNi1/2Mn1/2O2 \cdot xLi[Li1/3Mn2/3]O2 \cdot xLiCoO2 (0\leq x
        ≤0.5) cathode material for lithium batteries)
     128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
     184909-55-5P, Cobalt lithium manganese oxide (Co0.5Li1.17Mn0.3302)
     648436-14-0P, Cobalt lithium manganese nickel oxide
     (Co0.3Li1.1Mn0.4Ni0.202)
                                  845929-83-1P, Cobalt lithium manganese nickel
     oxide (Co0.2Li1.07Mn0.43Ni0.302) 845929-84-2P, Cobalt lithium
     manganese nickel oxide (Co0.1Li1.03Mn0.47Ni0.402)
                                                            882731-33-1P, Cobalt
     lithium manganese nickel oxide (Co0.4Li1.13Mn0.37Ni0.102)
     RL: DEV (Device component use); SPN (Synthetic preparation); PREP
     (Preparation); USES (Uses)
```

(effect of cooling rate in synthesis of (1-

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2×)LiNi1/2Mn1/2O2·xLi[Li1/3Mn2/3]O2·xLiCoO2 (0≤ x ≤0.5) cathode material for lithium batteries)

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ANSWER 42 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
1.3
                         2005:1002621 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         144:91015
TITLE:
                         Characterization of Lil+yNixCol-2xMnxO2 positive
                         active materials for lithium ion batteries
AUTHOR(S):
                         Shizuka, Kenji; Kobayashi, Takako; Okahara, Kenji;
                         Okamoto, Kaoru; Kanzaki, Shou; Kanno, Ryoji
CORPORATE SOURCE:
                         Mitsubishi Chemical Group Science and Technology
                         Research Center Inc., Aoba-ku, Yokohama, 227-8502,
                         Japan
SOURCE:
                         Journal of Power Sources (2005), 146(1-2), 589-593
                         CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER:
                         Elsevier B.V.
DOCUMENT TYPE:
                         Journal
                         English
LANGUAGE:
REFERENCE COUNT:
                         17
                               THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     Characterization of Lil+yNixCol-2xMnxO2 positive active materials for
     lithium ion batteries
AB
     Lavered Lil+vNixCol-2xMnxO2 material was prepared by solid-state reactions
     at 950° for 10 h in air and characterized by various methods.
     Battery performance depended on the composition The rate performance
     deteriorated as Co content, (1-2x), decreased. However, it improved as
     excess Li content (y) increased. The change in battery
     performance associated with composition variations was related to the structural
     disorder (cation mixing) and the elec. conductivity (volume resistivity). The
     degree of cation mixing depended on Co content, but the volume resistivity
     depended on excess Li content. Battery performance improved
     with a decrease in cation mixing and volume resistivity. Only Ni K-edge
     XANES spectra showed edge shifts to higher energies due to the oxidation of
     Ni as either Co content (1-2x) or excess Li content (y) increased. The
     unit cell size decreased as the Co content or excess Li content increased.
     This is caused by the change from Ni2+ (r=0.69 Å) to the smaller Ni3+
     (r=0.56 \text{ Å}). It is assumed that the decrease in volume resistivity is
     related to the increase in Ni3+ concentration in Li1+yNixCo1-2xMnxO2.
ST
     cobalt lithium manganese nickel oxide cathode lithium ion battery
TΤ
     Battery cathodes
        (characterization of Lil+yNixCol-2xMnxO2 cathode materials for
        lithium-ion batteries)
ΙT
     Secondary batteries
        (lithium; characterization of Li1+yNixCo1-2xMnxO2 cathode materials for
        lithium-ion batteries)
IT
     193215-96-2, Cobalt lithium manganese nickel oxide
     (Co0.2LiMn0.4Ni0.4O2) 247565-42-0, Cobalt lithium manganese
     nickel oxide (Co0.2Li1.05Mn0.4Ni0.4O2) 405890-05-3, Cobalt
     lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 459408-76-5
      Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.48O2)
     477567-62-7, Cobalt lithium manganese nickel oxide
     (Co0.1Li1.05Mn0.45Ni0.4502)
                                   532934-38-6, Cobalt lithium manganese nickel
     oxide (Co0.34LiMn0.33Ni0.33O2) 807654-96-2, Cobalt lithium
     manganese nickel oxide (Co0.2Li1.15Mn0.4Ni0.4O2) 807654-99-5,
     Cobalt lithium manganese nickel oxide (Co0.2Li1.2Mn0.4Ni0.4O2)
     872418-77-4, Cobalt lithium manganese nickel oxide
     (Co0.34Li1.05Mn0.33Ni0.33O2)
                                    872418-79-6, Cobalt lithium manganese
     nickel oxide (Co0.34Li1.1Mn0.33Ni0.3302)
                                                872418-80-9, Cobalt lithium
     manganese nickel oxide (Co0.34Li1.15Mn0.33Ni0.33O2)
                                                           872418-81-0, Cobalt
     lithium manganese nickel oxide (Co0.34Li1.2Mn0.33Ni0.33O2)
     872418-82-1, Cobalt lithium manganese nickel oxide
     (Co0.2Li1.1Mn0.4Ni0.4O2) 872418-83-2, Cobalt lithium manganese
     nickel oxide (Co0.1Li1.1Mn0.45Ni0.45O2) 872418-84-3, Cobalt
     lithium manganese nickel oxide (Co0.1Li1.15Mn0.45Ni0.45O2)
     872418-85-4, Cobalt lithium manganese nickel oxide
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(Co0.1Li1.2Mn0.45Ni0.45O2) 872418-86-5, Cobalt lithium manganese

lithium manganese nickel oxide (Co0.05Li1.1Mn0.48Ni0.48O2) 872418-88-7, Cobalt lithium manganese nickel oxide (Co0.05Lil.15Mn0.48Ni0.48O2) 872418-90-1, Cobalt lithium manganese nickel oxide (Co0.05Li1.2Mn0.48Ni0.48O2) RL: DEV (Device component use); PRP (Properties); USES (Uses) (characterization of Lil+yNixCol-2xMnxO2 cathode materials for lithium-ion batteries) ANSWER 43 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN 2005:962566 CAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 143:251015 TITLE: Cathode active material with improved cycling stability for lithium ion batteries INVENTOR(S): Bormet, Steffen; Reim, Joerg; Rentsch, Harald; Schelling, Volker PATENT ASSIGNEE(S): Ferro G.m.b.H., Germany SOURCE: PCT Int. Appl., 18 pp. CODEN: PIXXD2 DOCUMENT TYPE: Patent LANGUAGE: English FAMILY ACC. NUM. COUNT: 1 PATENT INFORMATION: PATENT NO. KIND DATE APPLICATION NO. DATE _____ ____ _____ ______ WO 2005081338 20050901 **A**1 WO 2005-EP600 20050121 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG DE 102004008397 Α1 20050908 DE 2004-102004008397 20040220 PRIORITY APPLN. INFO.: DE 2004-102004008397A 20040220 7 REFERENCE COUNT: THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT Cathode active material with improved cycling stability for lithium ion batteries The invention relates to a pos. active electrode material for use in rechargeable lithium ion batteries, to a lithium secondary cell having the electrode material according to the invention, and to a method for the production of the latter. The cathode active material is: LaaNil-x-y-zMnxCoyMzO2, where M = Nb and/or Ta, and 1.00 \leq a ≤ 1.15 , 0.5 < x + y + z < 1.0, 0.1 < x < 0.5, 0.01 < y < 0.3, and $0 < z \leq 0.1$. lithium battery cathode improved cycling stability Ball milling Battery cathodes Grinding (machining) Heat treatment (cathode active material with improved cycling stability for lithium ion batteries) Secondary batteries (lithium; cathode active material with improved cycling stability for lithium ion batteries) 7439-93-2, Lithium, uses 7439-93-2D, Lithium, compound RL: DEV (Device component use); USES (Uses) (cathode active material with improved cycling stability for lithium ion batteries) 405890-05-3P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 863498-38-8P 863498-39-9P 863498-40-2P

nickel oxide (Co0.05Li1.05Mn0.48Ni0.48O2) 872418-87-6, Cobalt

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863498-41-3P 863498-42-4P 863498-43-5P
     863498-44-6P 863498-45-7P 863498-46-8P
     863498-47-9P 863499-34-7P
     RL: DEV (Device component use); SPN (Synthetic preparation); PREP
     (Preparation); USES (Uses)
        (cathode active material with improved cycling stability for lithium
        ion batteries)
     ANSWER 44 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
                        2005:960521 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                        143:269593
TITLE:
                        Secondary lithium batteries with laminated
                        aluminum packages
INVENTOR(S):
                        Kono, Kazushige; Kasai, Masahiro; Yagi, Yoshin
PATENT ASSIGNEE(S):
                        Shin-Kobe Electric Machinery Co., Ltd., Japan
SOURCE:
                        Jpn. Kokai Tokkyo Koho, 11 pp.
                        CODEN: JKXXAF
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
                       KIND DATE APPLICATION NO.
    PATENT NO.
                                                                DATE
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     _____
                               -----
                                           -----
                                                                  _____
     JP 2005235601
                        A2
                               20050902
                                           JP 2004-43788
                                                                  20040220
PRIORITY APPLN. INFO.:
                                           JP 2004-43788
                                                                  20040220
    Secondary lithium batteries with laminated aluminum packages
    Secondary lithium batteries sealed with laminated Al is
     characterized by having their (sealed area)/(projected area of the
    battery) ratio of 12-25 area%. Preferably, the batteries
     include LiMnxNi1-x-yCoyO2 (x, y = 0.001-0.5) as cathodes and amorphous C
     as anodes. The laminates are lightwt. and have sufficient mech. strength.
    secondary lithium battery laminated aluminum package; amorphous
     carbon anode lightwt battery; lithium manganese oxide cathode
    battery
     Packaging materials
        (laminated films, aluminum; lightwt. secondary lithium
       batteries with strong laminated aluminum packages)
     Secondary batteries
        (lithium; lightwt. secondary lithium batteries with strong
        laminated aluminum packages)
     7440-44-0, Carbon, uses
     RL: DEV (Device component use); USES (Uses)
        (amorphous, anode; lightwt. secondary lithium batteries with
        strong laminated aluminum packages)
     12057-17-9, Lithium manganese oxide (LiMn2O4) 863646-33-7,
    Cobalt lithium manganese nickel oxide (Co0-0.5LiMn0-0.5Ni0-102)
     RL: DEV (Device component use); USES (Uses)
        (cathode; lightwt. secondary lithium batteries with strong
        laminated aluminum packages)
    7429-90-5, Aluminum, uses
     RL: DEV (Device component use); USES (Uses)
        (laminated, packaging; lightwt. secondary lithium batteries
       with strong laminated aluminum packages)
    ANSWER 45 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
                        2005:958639 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                        144:111136
TITLE:
                        Structural and electrochemical characterization of the
                        layered LiNi0.5-yMn0.5-yCo2yO2 (0 \le 2y \le 1)
                        cathodes
AUTHOR(S):
                        Choi, J.; Manthiram, A.
CORPORATE SOURCE:
                        Materials Science and Engineering Program, The
                        University of Texas at Austin, Austin, TX, 78712, USA
```

Solid State Ionics (2005), 176(29-30), 2251-2256

CODEN: SSIOD3; ISSN: 0167-2738

L3

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SOURCE:

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST layered cobalt lithium manganese nickel oxide cathode lithium

battery IT Air

(in synthesis of layered LiNi0.5-yMn0.5-yCo2yO2 cathodes for lithium batteries)

IT Secondary batteries

(lithium; structural and electrochem. characterization of layered LiNi0.5-yMn0.5-yCo2yO2 cathodes for lithium batteries)

IT Battery cathodes

(structural and electrochem. characterization of layered LiNi0.5-yMn0.5-yCo2yO2 cathodes for lithium batteries)

12017-00-4D, Cobalt oxide (CoO2), oxygen-deficient 522613-35-0D, Manganese nickel oxide (MnNiO4), oxygen-deficient 868844-20-6D, Cobalt manganese nickel oxide (CoO.33MnO.33NiO.33O2), oxygen-deficient 872998-55-5D, Cobalt manganese nickel oxide (CoO.5MnO.25NiO.25O2), oxygen-deficient 872998-56-6D, Cobalt manganese nickel oxide (CoO.41MnO.3NiO.3O2), oxygen-deficient 872998-57-7D, Cobalt manganese nickel oxide (CoO.15MnO.42NiO.42O2), oxygen-deficient RL: NUU (Other use, unclassified); USES (Uses)

(in structural and electrochem. characterization of layered LiNi0.5-yMn0.5-yCo2yO2 cathodes for lithium batteries)

IT 7782-44-7, Oxygen, uses

RL: NUU (Other use, unclassified); USES (Uses) (in synthesis of layered LiNi0.5-yMn0.5-yCo2yO2 cathodes for lithium batteries)

TT 12190-79-3, Cobalt lithium oxide (CoLiO2) 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502) 390362-01-3, Cobalt lithium manganese nickel oxide (Co0.5LiMn0.25Ni0.25O2) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 459408-76-5, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.48O2) 697766-76-0, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.42Ni0.42O2) 781672-38-6, Cobalt lithium manganese nickel oxide (Co0.58LiMn0.21Ni0.21O2) 854546-03-5, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.34Ni0.34O2) 854546-04-6, Cobalt lithium manganese nickel oxide (Co0.41LiMn0.3Ni0.302) RL: DEV (Device component use); PRP (Properties); USES (Uses)

RL: DEV (Device component use); PRP (Properties); USES (Uses) (structural and electrochem. characterization of layered LiNi0.5-yMn0.5-yCo2yO2 cathodes for lithium batteries)

L3 ANSWER 46 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:901283 CAPLUS

DOCUMENT NUMBER: 144:8912

TITLE: Structure, morphology and electrochemical properties

of LiNi0.5Mn0.5-xCoxO2 prepared by solid state

reaction

AUTHOR(S): Li, Decheng; Sasaki, Yuki; Kageyama, Masaya;

Kobayakawa, Koichi; Sato, Yuichi

CORPORATE SOURCE: High-Tech Research Center, Kanagawa University,

Yokohama, 221-8686, Japan

SOURCE: Journal of Power Sources (2005), 148, 85-89

CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ST cobalt lithium manganese nickel oxide prepn structure property; cathode cobalt lithium manganese nickel oxide battery

IT 176206-89-6, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.2Ni0.502) 191024-83-6, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.1Ni0.502) 193215-53-1, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502)

```
193215-92-8, Cobalt lithium manganese nickel oxide
     (Co0.1LiMn0.4Ni0.502)
    RL: CPS (Chemical process); PEP (Physical, engineering or chemical
    process); PRP (Properties); PROC (Process)
        (structure, morphol. and electrochem. properties of cobalt lithium
       manganese nickel oxide prepared by solid state reaction)
    ANSWER 47 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2005:734631 CAPLUS
DOCUMENT NUMBER:
                        144:394378
TITLE:
                        The effect of Ti4+, Mg2+ co-doping on performance of
                        LiNi0.4Co0.2Mn0.402
                        Huang, You-Yuan; Zhou, Heng-Hui; Chen, Ji-Tao; Gao,
AUTHOR(S):
                        De-Shu; Su, Guang-Yao
                        College of Chemistry, Xiangtan University, Xiangtan,
CORPORATE SOURCE:
                        411105, Peop. Rep. China
SOURCE:
                        Wuli Huaxue Xuebao (2005), 21(7), 725-729
                        CODEN: WHXUEU; ISSN: 1000-6818
PUBLISHER:
                        Wuli Huaxue Xuebao Bianjibu
DOCUMENT TYPE:
                        Journal
LANGUAGE:
                        Chinese
    cobalt lithium manganese nickel oxide cathode lithium battery;
     lithium battery cathode titanium magnesium codoping
    Battery cathodes
        (effect of Ti4+ and Mg2+ co-doping on performance of
       LiNi0.4Co0.2Mn0.4O2 cathode material for lithium batteries)
    Secondary batteries
        (lithium; effect of Ti4+ and Mg2+ co-doping on performance of
        LiNi0.4Co0.2Mn0.4O2 cathode material for lithium batteries)
    193215-96-2, Cobalt lithium manganese nickel oxide
     (Co0.2LiMn0.4Ni0.4O2) 882695-67-2 882695-69-4
    RL: DEV (Device component use); USES (Uses)
        (effect of Ti4+ and Mg2+ co-doping on performance of
        LiNi0.4Co0.2Mn0.4O2 cathode material for lithium batteries)
    16043-45-1, Titanium (4+), uses 22537-22-0, Magnesium (2+), uses
    RL: MOA (Modifier or additive use); USES (Uses)
        (effect of Ti4+ and Mg2+ co-doping on performance of
       LiNi0.4Co0.2Mn0.4O2 cathode material for lithium batteries)
    ANSWER 48 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2005:632450 CAPLUS
                        143:156301
DOCUMENT NUMBER:
TITLE:
                        Mixed oxide cathode active materials for secondary
                        lithium batteries and secondary lithium
                        batteries
                        Kasai, Masahiro; Yuasa, Toyotaka
INVENTOR(S):
PATENT ASSIGNEE(S):
                        Hitachi Ltd., Japan; Shin-Kobe Electric Machinery Co.,
                        Ltd.
SOURCE:
                        Jpn. Kokai Tokkyo Koho, 10 pp.
                        CODEN: JKXXAF
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        Japanese
FAMILY ACC. NUM. COUNT:
                        1
PATENT INFORMATION:
     PATENT NO.
                        KIND
                               DATE
                                         APPLICATION NO.
                                                                 DATE
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                        ----
                               _____
                                           -----
                       A2 20050721 JP 2003-435483 20031226
JP 2003-435483 20031226
     JP 2005196992
PRIORITY APPLN. INFO.:
    Mixed oxide cathode active materials for secondary lithium
    batteries and secondary lithium batteries
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AB The title cathode active materials (1) are layer-structured mixed oxides containing Li, Ni, Mn, and Co and ≥1 rare earth oxides, (2) comprise LixNiaMnbCocO2 and RE2O3, where RE is trivalent rare earth metals, 0 < x < 1.2, a + b + c = 1, 0 < a < 1, 0 < b < 1, and 0 < c < 1, or (3) Li-, Ni-, Mn-, and Co-containing mixed oxide primary particles with their surfaces

equipped with ≥1 rare earth oxide fine-grain particles. Secondary lithium batteries including the said cathodes are also claimed. The batteries show high energy d. and are especially suitable for on-vehicle use. secondary lithium battery mixed oxide cathode; rare earth oxide

ST contg lithium mixed oxide cathode; cathode lithium nickel manganese cobalt oxide

IT Secondary batteries

> (lithium; secondary lithium batteries with Co Li Mn Ni rare earth mixed oxide cathode active materials)

ΙT Battery cathodes

> (secondary lithium batteries with Co Li Mn Ni rare earth mixed oxide cathode active materials)

IT 296800-21-0, Cobalt lithium manganese nickel oxide ((Co, Mn, Ni)Li0-1.202) 860018-44-6, Cobalt lithium manganese nickel oxide (Co0.3Li1.02Mn0.2Ni0.602) 860018-45-7, Cobalt lithium manganese nickel oxide (Co0.33Li1.02Mn0.33Ni0.3402)

RL: DEV (Device component use); USES (Uses)

(secondary lithium batteries with Co Li Mn Ni rare earth mixed oxide cathode active materials)

ΙT 1306-38-3, Cerium oxide (CeO2), uses 1308-87-8, Dysprosium oxide (Dy2O3) 1308-96-9, Europium oxide (Eu2O3) 1312-81-8, Lanthanum oxide (La2O3) 1313-97-9, Neodymium oxide (Nd2O3) 1314-36-9, Yttrium oxide (Y2O3), uses 1314-37-0, Ytterbium oxide (Yb2O3) 12032-20-1, Lutetium oxide (Lu203) 12036-32-7, Praseodymium oxide (Pr203) 12036-41-8, Terbium oxide (Tb203) 12055-62-8, Holmium oxide (Ho2O3) 12060-58-1, Samarium oxide (Sm2O3) 12061-16-4, Erbium oxide (Er203) 12064-62-9, Gadolinium oxide (Gd2O3) RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

> (secondary lithium batteries with Co Li Mn Ni rare earth mixed oxide cathode active materials)

ANSWER 49 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:

2005:606353 CAPLUS

DOCUMENT NUMBER:

143:118038

TITLE:

Secondary lithium battery and method for its

initial activation

INVENTOR(S):

Fujii, Akihiro; Shiozaki, Ryuji; Nukuta, Toshiyuki

Yuasa Corporation, Japan PATENT ASSIGNEE(S):

SOURCE:

Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005190874	A2	20050714	JP 2003-432151	20031226
PRIORITY APPLN. INFO.:			JP 2003-432151	20031226

Secondary lithium battery and method for its initial activation ΤI AB

The claimed battery, for functioning at 4.3-4.6 V, is equipped with a cathode containing α -NaFeO2-type layered structure Li-transition metal compound and a nonaq. electrolyte containing vinylene carbonate. battery is charged at 4.3-4.6 V for 10-500 h for the initial activation. The battery provides high storage stability.

ST initial activation secondary lithium battery electrolyte vinylene carbonate; lithium transition metal oxide cathode secondary battery

ΙT Battery cathodes

Battery electrolytes

(initial activation of secondary lithium battery containing vinylene carbonate)

ΙT Secondary batteries

> (lithium; initial activation of secondary lithium battery containing vinylene carbonate)

```
346417-97-8, Cobalt lithium manganese nickel oxide
IT
     (Co0.33LiMn0.33Ni0.33O2) 686740-96-5, Cobalt lithium manganese nickel
     oxide (Co0.67LiMn0.17Ni0.17O2) 686740-97-6, Cobalt lithium
     manganese nickel oxide (Co0.17LiMn0.42Ni0.42O2)
     RL: DEV (Device component use); USES (Uses)
        (cathodes; initial activation of secondary lithium battery
        containing vinylene carbonate)
IT
     872-36-6, Vinylene carbonate
     RL: DEV (Device component use); USES (Uses)
        (electrolyte containing; initial activation of secondary lithium
        battery containing vinylene carbonate)
     ANSWER 50 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
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                       2005:572419 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         143:81215
                         Cathode material for lithium secondary battery
TITLE:
                         Yuasa, Toyotaka; Kasai, Masahiro
INVENTOR(S):
PATENT ASSIGNEE(S):
                         Japan
                         U.S. Pat. Appl. Publ., 13 pp.
SOURCE:
                         CODEN: USXXCO
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         English
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
                      KIND DATE APPLICATION NO. DATE
     PATENT NO.
                        A1 20050630 US 2004-20034
A2 20050721 JP 2003-435660
A 20050713 CN 2004-10011485
                                                                   20041223
     US 2005142442
                                           JP 2003-435660 20031226
CN 2004-10011485 20041224
     JP 2005197004
     CN 1638173
PRIORITY APPLN. INFO.:
                                            JP 2003-435660 A 20031226
    Cathode material for lithium secondary battery
ΤI
    A pos. electrode material for a nonaq. lithium secondary battery
AΒ
     and a lithium secondary battery that has superior cycle life and
     safety and reduced internal resistance of the battery at low
     temperature is provided. The pos. electrode material for a nonaq. lithium
     secondary battery comprises a layered structured complex oxide
     expressed by a composition formula LiaMnxNiyCozMαO2, where
     0 < a \le 1.2, 0.1 \le x \le 0.9, 0 \le y \le 0.44,
     0.1 \le z \le 0.6, 0.01 \le \alpha \le 0.1, and
     x+y+z+\alpha=1. A diffraction peak intensity ratio between the (003)
     plane and the (104) plane (I(003)/I(104)) in an X-ray powder
     diffractometry using a Cu-K\alpha line in the X-ray source is not less
     than 1.0 and not more than 1.5.
     cathode material lithium secondary battery; safety lithium
ST
     secondary battery
     Battery cathodes
TΤ
     Surface area
        (cathode material for lithium secondary battery)
     Secondary batteries
TT
        (lithium; cathode material for lithium secondary battery)
                 186298-17-9 217309-43-8, Cobalt lithium manganese nickel
IT
     186298-15-7
     oxide (Co0.3LiMn0.3Ni0.402)
                                 478037-17-1
                                                  493326-93-5, Cobalt lithium
     manganese nickel oxide (Co0.33LiMn0.34Ni0.3302)
                                                       681160-59-8, Cobalt
     lithium manganese nickel oxide (Co0.3LiMn0.4Ni0.302) 855998-68-4
      Cobalt lithium manganese nickel oxide (Co0.1-0.6Li0-1.2Mn0.1-0.9Ni0-
     0.4402) 855998-69-5 855998-70-8 855998-71-9 855998-72-0
                                               855998-76-4 855998-77-5
     855998-73-1 855998-74-2 855998-75-3
     855998-78-6 855998-79-7 855998-80-0
     RL: DEV (Device component use); USES (Uses)
        (cathode material for lithium secondary battery)
ΙT
     7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (cathode material for lithium secondary battery)
```

ACCESSION NUMBER: 2005:572418 CAPLUS

DOCUMENT NUMBER: 143:100336

TITLE: Lithium ion secondary battery INVENTOR(S): Yamaki, Takahiro; Arai, Juichi

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005142440	A1	20050630	US 2004-17944	20041222
JP 2005197002	A2	20050721	JP 2003-435626	20031226
FR 2864708	A1	20050701	FR 2004-53227	20041224
PRIORITY APPLN. INFO.:			JP 2003-435626 A	20031226

TI Lithium ion secondary battery

AB A lithium ion secondary battery is disclosed having high output characteristics even at an extremely low temperature, for example, -30° and high output power even in a low charged state. A graphite-based material having an R value (IRD/IRG) which is the ratio of peak intensity (IRD) at 1,300 to 1,400 cm-1 to peak intensity (IRG) at 1,580 to 1,620 cm-1 measured in its Raman spectrum of 0.3 to 0.6 and an H value (IH(110)/IH(004)) which is the ratio of the peak height intensity (IH(110)) of the face (110) to the peak height intensity (IH(004)) of the face (004) in its X-ray diffraction of 0.5 to 2.0 or a C value which is the ratio of the peak integral intensity (IC(110)) of the face (110) to the peak integral intensity (IC(004)) of the face (004) of 0.4 to 1.50 is used as a neg.-electrode active material.

ST lithium ion secondary battery

IT Battery anodes

Battery cathodes

(lithium ion secondary battery)

IT Secondary batteries

(lithium; lithium ion secondary battery)

7782-42-5, Graphite, uses 12057-17-9, Lithium manganese oxide (LiMn2O4) TΤ 12190-79-3, Cobalt lithium oxide (CoLiO2) 21324-40-3, Lithium hexafluorophosphate 187100-95-4, Aluminum lithium nickel oxide 190902-96-6, Cobalt lithium nickel oxide (Al0.05-0.3LiNi0.7-0.9502) (Co0.05-0.3LiNi0.7-0.9502) 193214-24-3, Aluminum cobalt lithium nickel oxide (Al0.05Co0.15LiNi0.802) 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 856700-19-1 856700-20-4 856700-21-5 856700-22-6 856700-24-8 856700-26-0 856700-28-2, Lithium manganese 856700-29-3, Iron lithium nickel nickel oxide (LiMn0.05-0.3Ni0.7-0.9502) oxide (Fe0.05-0.3LiNi0.7-0.9502) 856700-30-6, Chromium lithium nickel 856700-31-7, Copper lithium nickel oxide (Cr0.05-0.3LiNi0.7-0.9502) oxide (Cu0.05-0.3LiNi0.7-0.9502) 856700-32-8, Lithium magnesium nickel oxide (LiMg0.05-0.3Ni0.7-0.9502) 856700-33-9, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.3402) 856700-34-0 856700-35-1, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.402) RL: DEV (Device component use); USES (Uses)

(lithium ion secondary battery)

L3 ANSWER 52 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:544051 CAPLUS

DOCUMENT NUMBER: 143:250877

TITLE: Influence of the synthesis route on the

electrochemical properties of LiNi0.425Mn0.425Co0.1502

AUTHOR(S): Tran, N.; Croguennec, L.; Jordy, C.; Biensan, Ph.;

Delmas, C.

CORPORATE SOURCE: Institut de Chimie de la Matiere Condensee de

Bordeaux-CNRS, Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac,

33608, Fr.

SOURCE: Solid State Ionics (2005), 176(17-18), 1539-1547

CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier B.V. DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: THERE ARE 69 CITED REFERENCES AVAILABLE FOR THIS 69 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB LiNi0.425Mn0.425Co0.1502 has been synthesized by three different methods at 1000° for 12 h in air: (a) copptn. of a mixed nickel, manganese and cobalt hydroxide and then removal of the solvents by evaporation, (b) same precipitation conditions as (a) but the solvents were removed by freeze-drying, and (c) a mixed nickel, manganese and cobalt hydroxide was prepared by copptn. of the transition metal ions into lithium hydroxide only and, after washing and drying, the hydroxide was mixed with lithium carbonate and calcined at 1000° for 12 h in air. Chemical titrns., x-ray diffraction analyses by the Rietveld method and magnetic measurements showed that very similar overall chemical formula and cationic distributions were obtained for LiNi0.425Mn0.425Co0.15O2 synthesized by the three different methods. However, scanning electron micrographs, particle size distribution and sp. surface area measurements showed textural differences in the three LiNi0.425Mn0.425Co0.1502 samples, which are believed to play a key role in the electrode preparation and thus to explain the differences observed in the electrochem. behavior in lithium battery.

ST cobalt lithium manganese nickel oxide synthesis electrochem property; cathode cobalt lithium manganese nickel oxide battery

Battery cathodes IT

> (influence of synthesis method on electrochem. properties of cobalt lithium manganese nickel oxide for use as cathode in lithium batteries)

IT 697766-76-0, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.42Ni0.42O2)

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)

(influence of synthesis method on electrochem, properties of cobalt lithium manganese nickel oxide for use as cathode in lithium batteries)

ANSWER 53 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:522751 CAPLUS

DOCUMENT NUMBER: 143:46047

TITLE: Method and apparatus for charging secondary lithium

battery and electric power supply device

INVENTOR(S): Iijima, Takeshi; Ogawa, Kazuya; Tanaka, Toshifumi;

Maruyama, Akira

PATENT ASSIGNEE(S): TDK Corporation, Japan

Jpn. Kokai Tokkyo Koho, 27 pp. SOURCE:

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005158285	A2	20050616	JP 2003-390858	20031120
JP 3795886	B2	20060712		
PRIORITY APPLN. INFO.:			JP 2003-390858	20031120

Method and apparatus for charging secondary lithium battery and

TΙ electric power supply device

The battery, having a cathode which contains a Li Mn Ni AB composite oxide active mass, an anode, and a Li salt-containing nonaq. electrolyte solution, is charged at a constant current which satisfies $2C \le nC \le 60C$ (C = rated capacity; and n = 2-60). The apparatus has a power supply unit supplying elec. power to the battery and

a charging control unit controlling the power supply unit during charging and adjusting the charging rate of the battery. The power supply device contains the battery and the charging apparatus

ST secondary lithium battery charging method app

ΙT Secondary batteries

> (lithium; methods and apps. for charging secondary lithium batteries)

96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate IT Propylene carbonate 872-36-6, Vinylene carbonate 7782-42-5, Graphite, 21324-40-3, Lithium hexafluorophosphate 39302-37-9, Lithium 193215-51-9, Cobalt lithium manganese nickel oxide titanium oxide 346417-97-8, Cobalt lithium manganese nickel (Co0.15LiMn0.3Ni0.5502) oxide (Co0.33LiMn0.33Ni0.33O2) 532934-40-0, Cobalt lithium manganese nickel oxide (Co0.16LiMn0.42Ni0.42O2) RL: DEV (Device component use); USES (Uses)

(methods and apps. for charging secondary lithium batteries)

ANSWER 54 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:508579 CAPLUS

DOCUMENT NUMBER: 143:214234

TITLE: Role of Alumina Coating on Li-Ni-Co-Mn-O Particles as

Positive Electrode Material for Lithium-Ion

Batteries

AUTHOR(S): Myung, Seung-Taek; Izumi, Kentarou; Komaba, Shinichi;

> Sun, Yang-Kook; Yashiro, Hitoshi; Kumagai, Naoaki Department of Frontier Materials and Functional

Engineering, Graduate School of Engineering, Iwate

University, Iwate, Morioka, 020-8551, Japan

Chemistry of Materials (2005), 17(14), 3695-3704

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal LANGUAGE: English

CORPORATE SOURCE:

SOURCE:

THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS REFERENCE COUNT: 29

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

Role of Alumina Coating on Li-Ni-Co-Mn-O Particles as Positive Electrode Material for Lithium-Ion Batteries

The interface reaction between Al2O3-coated Li[Li0.05Ni0.4Co0.15Mn0.4]02 AΒ and a liquid electrolyte was studied. The Al2O3-coated Li[Li0.05Ni0.4Co0.15Mn0.4]02 showed no large difference in bulk structure, compared to bare Li[Li0.05Ni0.4Co0.15Mn0.4]02. The coated Al203 has an amorphous structure according to XRD results. A small amount of Al2O3 coating (0.25% in the final composition) showed a uniform mesoporous Al203-coating layer whose thickness is .apprx.5 nm covers Li[Li0.05Ni0.4Co0.15Mn0.4]02 particles, as confirmed by TEM. At higher concentration (2.5% in the final composition), irregular, tens of nanometer-sized Al203 powder was observed on the surface of the active material, instead of the uniform coating layer. Despite the insulating nature of Al2O3, the thin coating was effective to improve battery performance, depending on the thickness of the Al203-coating layer, and the electrolytic salt used. The Al2O3 coating resulted in a higher capacity retention, especially at 60°. The alumina layer protected against HF attack from the electrolyte during cycling so that the decomposition of active material from HF attack was suppressed. The lower impedance was ascribed to the pos. effects on the electrode/electrolyte interface, the less amount of decomposition of active material by HF and/or scavenging of HF by the Al203-coating layer into the electrolyte. These effects made it possible to maintain the morphol. of the active material during extensive cycling. The bare particles however were severely degraded by cycling, due to HF. ST alumina coated cobalt lithium manganese nickel oxide cathode

battery

(lithium; role of alumina coating on cobalt lithium manganese nickel oxide cathode material for lithium-ion batteries)

IT Battery cathodes

Secondary batteries

IT

(role of alumina coating on cobalt lithium manganese nickel oxide

cathode material for lithium-ion batteries) IT 862366-00-5, Cobalt lithium manganese nickel oxide (Co0.15Li1.05Mn0.4Ni0.4O2) 862366-01-6, Cobalt lithium manganese nickel oxide (Co0.15Li0.38Mn0.4Ni0.4O2) 862366-02-7, Cobalt lithium manganese nickel oxide (Co0.15Li0.43Mn0.4Ni0.4O2) 862366-03-8, Cobalt lithium manganese nickel oxide (Co0.15Li0.48Mn0.4Ni0.4O2) 862366-04-9, Cobalt lithium manganese nickel oxide (Co0.15Li0.58Mn0.4Ni0.4O2) 862366-05-0, Cobalt lithium manganese nickel oxide (Co0.15Li0.68Mn0.4Ni0.4O2) 862366-06-1, Cobalt lithium manganese nickel oxide (Co0.15Li0.78Mn0.4Ni0.4O2) 862366-07-2, Cobalt lithium manganese nickel oxide (Co0.15Li0.88Mn0.4Ni0.4O2) 862366-08-3, Cobalt lithium manganese nickel oxide (Co0.15Li0.98Mn0.4Ni0.4O2) RL: DEV (Device component use); USES (Uses) (alumina-coated; role of alumina coating on cobalt lithium manganese nickel oxide cathode material for lithium-ion batteries) 1344-28-1, Alumina, uses IΤ RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (cobalt lithium manganese nickel oxide coated with; role of alumina coating on cobalt lithium manganese nickel oxide cathode material for lithium-ion batteries)

L3ANSWER 55 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

2005:493821 CAPLUS ACCESSION NUMBER:

DOCUMENT NUMBER: 143:29509

TITLE: Process and reactor for preparation of cathode active

material for lithium secondary battery

INVENTOR(S): Sun, Yang Kook; Lee, Myoung Hun; Kang, Yoon Jung; Kim,

Gil Ho

PATENT ASSIGNEE(S): Hanyang Hak Won Co., Ltd., S. Korea

PCT Int. Appl., 32 pp. SOURCE:

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

		KIN	D	DATE			APPLICATION NO.										
	WO 2005				A1		2005	0609							20	0041	 117
	W:	ΑE,	AG,	AL,	AM,	AT,	AU,	AZ,	BA,	BB,	BG,	BR,	BW,	BY,	ΒZ,	CA,	CH,
		CN,	CO,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ,	EC,	EE,	EG,	ES,	FI,	GB,	GD,
		GE,	GH,	GM,	HR,	HU,	ID,	IL,	IN,	IS,	JP,	KE,	KG,	KP,	KZ,	LC,	LK,
				LT,													
		NZ,	OM,	PG,	PH,	PL,	PT,	RO,	RU,	SC,	SD,	SE,	SG,	SK,	SL,	SY,	ТJ,
				TR,													
	RW:			GM,													AM,
				KG,								-				-	
				FI,													
				SK,													
				TD,		,	•	,	,	,	,	,	 ,	· 2,	J,	,	,
	KR 2004	•	•	•	-		2004	0124		KR 2	003-	8470	2		21	0031	126
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		••••			•												FORMAT
ΤI	Process	and	rea	ctor	for												
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ΤI secondary battery

AΒ The invention relates to a cathode active material for a lithium secondary battery and a process for preparing the same. In accordance with the present invention, the cathode active material having a high packing d. was designed and synthesized and thus provided is a cathode active material for a lithium secondary battery exhibiting structural stability such as improved characteristics for charge/discharge, service life and high-rate and thermal stability, by modifying surface of the electrode active material with amphoteric or basic compds. capable of

neutralizing acid produced around the cathode active material. ST cathode active material prepn lithium secondary battery TT Secondary batteries (lithium; process and reactor for preparation of cathode active material for lithium secondary battery) IΤ Battery cathodes (process and reactor for preparation of cathode active material for lithium secondary battery) IT Carbon black, uses Fluoropolymers, uses RL: MOA (Modifier or additive use); USES (Uses) (process and reactor for preparation of cathode active material for lithium secondary battery) IT 113066-89-0P, Cobalt lithium nickel oxide (Co0.2LiNi0.802) 128975-24-6P, Lithium manganese nickel oxide LiMn0.5Ni0.5O2 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 346417-97-8P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 837287-95-3P 852875-92-4P RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (process and reactor for preparation of cathode active material for lithium secondary battery) IT24937-79-9, Pvdf RL: MOA (Modifier or additive use); USES (Uses) (process and reactor for preparation of cathode active material for lithium secondary battery) ANSWER 56 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2005:493050 CAPLUS DOCUMENT NUMBER: 143:29495 TITLE: Cathode active mass for secondary lithium battery, its manufacture, and the battery INVENTOR(S): Nakajima, Motoe; Inada, Fumi; Uchikawa, Akio PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp. CODEN: JKXXAF DOCUMENT TYPE: Patent LANGUAGE: Japanese FAMILY ACC. NUM. COUNT: PATENT INFORMATION: PATENT NO. KIND DATE APPLICATION NO. DATE -----____ _____ ______ A2 20050609 JP 2005150102 JP 2004-306421 20041021 PRIORITY APPLN. INFO.: JP 2003-364436 A 20031024 Cathode active mass for secondary lithium battery, its manufacture, and the battery STsecondary battery lithium transition metal oxide manuf atm humidity; particle size lithium transition metal oxide battery cathode ΙT Battery cathodes (compns. and medium particle size of lithium transition metal oxides and their manufacture for secondary lithium battery cathodes) ΙT 787635-96-5P, Cobalt lithium manganese nickel oxide (Co0.31Li1.08Mn0.33Ni0.3602) 787635-97-6P, Cobalt lithium manganese nickel oxide (Co0.3Li1.08Mn0.3Ni0.402) 787635-98-7P, Cobalt lithium manganese nickel oxide (Co0.2Li1.08Mn0.3Ni0.5O2) 787635-99-8P 787636-01-5P, Aluminum lithium manganese nickel 787636-00-4P oxide (Al0.1Li1.08Mn0.3Ni0.602) 852996-06-6P, Lithium manganese nickel oxide (Li1.08Mn0.3Ni0.702) RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses) (compns. and medium particle size of lithium transition metal oxides

and their manufacture for secondary lithium battery cathodes)

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L3
    ANSWER 57 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
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ACCESSION NUMBER: 2005:370911 CAPLUS

DOCUMENT NUMBER: 142:414564

TITLE: Electrochemical energy storage device

INVENTOR(S): Arai, Juichi; Kumashiro, Yoshiaki; Kobayasi, Mituru

PATENT ASSIGNEE(S):

SOURCE: U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. PATENT INFOR		r: 1				
PATENT	NO.	KIND	DATE	APPLICATION NO.		
JP 2005 WO 2005 W:	041343 AE, AG, A CN, CO, C GE, GH, C LR, LS, A NZ, OM, A TM, TN, C BW, GH, C AZ, BY, B	A1 A2 A1 AL, AM, AT CR, CU, CZ GM, HR, HU LT, LU, LV PG, PH, PL IR, TT, TZ GM, KE, LS KG, KZ, MD	20050519 20050506 , AU, AZ, BA, , DE, DK, DM, , ID, IL, IN, , MA, MD, MG, , PT, RO, RU, , UA, UG, US, , MW, MZ, NA, , RU, TJ, TM,	US 2004-785992 JP 2003-365961 WO 2004-JP8853 , BB, BG, BR, BW, , DZ, EC, EE, EG, , IS, KE, KG, KP, , MK, MN, MW, MX, , SC, SD, SE, SG, , UZ, VC, VN, YU, , SD, SL, SZ, TZ, , AT, BE, BG, CH, , IT, LU, MC, NL,	20040226 20031027 20040617 BY, BZ, CA, CH, ES, FI, GB, GD, KR, KZ, LC, LK, MZ, NA, NI, NO, SK, SL, SY, TJ, ZA, ZM, ZW UG, ZM, ZW, AM, CY, CZ, DE, DK,	
EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG PRIORITY APPLN. INFO.: JP 2003-365961 A 20031027 ST battery electrochem energy storage device IT Secondary batteries (electrochem. energy storage device) IT 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (electrochem. energy storage device)						
L3 ANSWER ACCESSION NU DOCUMENT NUM TITLE:	MBER:	2005:3 143:62 Factors	70194 CAPLUS 545 s influencing	06 ACS on STN S g the lithium ext odes of lithium i		

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L3
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layered oxide cathodes of lithium ion cells

AUTHOR(S): Manthiram, A.; Choi, J.

CORPORATE SOURCE: Materials Science and Engineering Program, The

University of Texas at Austin, Austin, TX, 78712, USA

Materials Research Society Symposium Proceedings SOURCE:

(2005), Volume Date 2004, 835(Solid State

Ionics--2004), 291-296

CODEN: MRSPDH; ISSN: 0272-9172 Materials Research Society

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

lithium extn layered oxide cathode lithium battery

IT Materials

PUBLISHER:

(layered; lithium extraction from layered oxide cathode material for lithium batteries)

ΙT Battery cathodes

(lithium extraction from layered oxide cathode material for lithium batteries)

IT Secondary batteries

> (lithium; lithium extraction from layered oxide cathode material for lithium batteries)

```
IT
     Intercalation
        (retro, electrochem.; lithium extraction from layered oxide cathode material
        for lithium batteries)
     13826-86-3, Nitronium fluoroborate (NO2BF4)
TT
     RL: NUU (Other use, unclassified); USES (Uses)
        (in lithium extraction from layered oxide cathode material for lithium
        batteries)
     7439-93-2, Lithium, processes
IT
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (lithium extraction from layered oxide cathode material for lithium
        batteries)
IT
     12190-79-3, Cobalt lithium oxide (CoLiO2)
                                               128975-24-6, Lithium manganese
     nickel oxide (LiMn0.5Ni0.502)
                                     390362-01-3, Cobalt lithium manganese
     nickel oxide (Co0.5LiMn0.25Ni0.25O2) 405890-05-3, Cobalt lithium
     manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 459408-76-5,
     Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.48O2)
     697766-76-0, Cobalt lithium manganese nickel oxide
     (Co0.15LiMn0.42Ni0.42O2)
                                781672-38-6, Cobalt lithium manganese nickel
     oxide (Co0.58LiMn0.21Ni0.2102)
                                      854546-03-5, Cobalt lithium manganese
     nickel oxide (Co0.33LiMn0.34Ni0.34O2)
                                             854546-04-6, Cobalt lithium
     manganese nickel oxide (Co0.41LiMn0.3Ni0.3O2)
     RL: NUU (Other use, unclassified); USES (Uses)
        (lithium extraction from layered oxide cathode material for lithium
        batteries)
    ANSWER 59 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
                         2005:370192 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         143:62543
TITLE:
                         Structural and electrochemical properties of
                         LiMn0.4Ni0.4Co0.202
AUTHOR(S):
                         Ma, Miaomiao; Chernova, Natasha A.; Zavalij, Peter Y.;
                         Whittingham, M. Stanley
CORPORATE SOURCE:
                         Materials Science, State University of New York at
                         Binghamton, Binghamton, NY, 13902, USA
SOURCE:
                         Materials Research Society Symposium Proceedings
                         (2005), Volume Date 2004, 835(Solid State
                         Ionics--2004), 279-284
                         CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER:
                         Materials Research Society
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
REFERENCE COUNT:
                         9
                               THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ST
     cobalt lithium manganese nickel oxide cathode lithium battery
ΙT
    Secondary batteries
        (lithium; structural and electrochem. properties of LiMn0.4Ni0.4Co0.202
        cathode material for lithium batteries)
IT
    Crystal structure
        (of LiMn0.4Ni0.4Co0.2O2 cathode material for lithium batteries
IT
     Battery cathodes
        (structural and electrochem. properties of LiMn0.4Ni0.4Co0.2O2 cathode
        material for lithium batteries)
IT
     193215-96-2, Cobalt lithium manganese nickel oxide
     (Co0.2LiMn0.4Ni0.4O2)
    RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (structural and electrochem. properties of LiMn0.4Ni0.4Co0.2O2 cathode
        material for lithium batteries)
TΤ
    128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
     532934-38-6, Cobalt lithium manganese nickel oxide
     (Co0.34LiMn0.33Ni0.33O2)
     RL: PRP (Properties); TEM (Technical or engineered material use); USES
     (Uses)
        (structural and electrochem. properties of LiMn0.4Ni0.4Co0.2O2 cathode
       material for lithium batteries)
```

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ANSWER 60 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2005:370191 CAPLUS
DOCUMENT NUMBER:
                         143:62542
TITLE:
                         Structure and electrochemical performances of the
                         Li1+x(Ni0.425Mn0.425Co0.15)1-xO2 materials
AUTHOR(S):
                         Tran, N.; Croguennec, L.; Weill, F.; Jordy, C.;
                         Biensan, P.; Delmas, C.
CORPORATE SOURCE:
                         Institut de Chimie de la Matiere Condensee de Bordeaux
                         (ICMCB-CNRS) and Ecale Nationale Superieure de Chimie
                         et Physique de Bordeaux (ENSCPB), Universite Bordeaux
                         1, Pessac, 33608, Fr.
SOURCE:
                         Materials Research Society Symposium Proceedings
                         (2005), Volume Date 2004, 835(Solid State
                         Ionics--2004), 273-278
                         CODEN: MRSPDH; ISSN: 0272-9172
                         Materials Research Society
PUBLISHER:
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
                               THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
REFERENCE COUNT:
                         12
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     cobalt lithium manganese nickel oxide cathode lithium battery
IT
     Secondary batteries
        (lithium; structure and electrochem. performance of
        Li1+x(Ni0.425Mn0.425Co0.15)1-xO2 cathode material for lithium
        batteries)
ΙT
     Crystal structure
        (of Li1+x(Ni0.425Mn0.425Co0.15)1-xO2 cathode material for lithium
        batteries)
ΙT
     Battery cathodes
        (structure and electrochem. performance of Li1+x(Ni0.425Mn0.425Co0.15)1-
        xO2 cathode material for lithium batteries)
     697766-76-0, Cobalt lithium manganese nickel oxide
ΙT
     (Co0.15LiMn0.42Ni0.42O2)
                                854736-23-5, Cobalt lithium manganese nickel
     oxide (Co0.13Li1.12Mn0.37Ni0.37O2)
     RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (structure and electrochem. performance of Li1+x(Ni0.425Mn0.425Co0.15)1-
        xO2 cathode material for lithium batteries)
    ANSWER 61 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2005:339295 CAPLUS
DOCUMENT NUMBER:
                         142:484698
TITLE:
                         Preparation and performance of cathode material
                         LiNi0.45Co0.1Mn0.4502
                         Li, Peng; Han, En-Shan; Tan, Bai-Shan; Xu, Hai-Jiang
AUTHOR(S):
CORPORATE SOURCE:
                         Dep. Appl. Chem., Hebei Univ. Technol., Tianjin,
                         300130, Peop. Rep. China
SOURCE:
                         Yingyong Huaxue (2005), 22(3), 304-307
                         CODEN: YIHUED; ISSN: 1000-0518
                         Kexue Chubanshe
PUBLISHER:
DOCUMENT TYPE:
                         Journal
                         Chinese
LANGUAGE:
     The title cathode material for lithium-ion batteries was prepared
     by the sol-gel method and investigated by means of phys. and electrochem.
     methods as the function of preparation conditions. Its structure and elec.
     behavior were characterized and measured by x-ray diffraction technique,
     DSC, cyclic voltammetry, and constant-current charge-discharge tests.
     results show that LiNi0.45Co0.5Mn0.45O2 obtained by calcination at
     700° for 7 h exhibited a sp. discharge capacity up to 145 mA-h/q
     after 30 charge-discharge cycles at 3.0-4.3 V.
     cobalt lithium manganese nickel oxide cathode prepn; battery
ST
     cobalt lithium manganese nickel oxide cathode
IT
     Battery cathodes
        (preparation and performance of cobalt lithium manganese nickel oxide
        cathode material for lithium-ion batteries)
IT
     405890-05-3, Cobalt lithium manganese nickel oxide
```

```
(Co0.1LiMn0.45Ni0.4502)
     RL: CPS (Chemical process); DEV (Device component use); PEP (Physical,
     engineering or chemical process); PROC (Process); USES (Uses)
        (preparation and performance of cobalt lithium manganese nickel oxide
        cathode material for lithium-ion batteries)
    ANSWER 62 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:323493 CAPLUS
DOCUMENT NUMBER:
                        142:395061
TITLE:
                        Cathode material for secondary nonaqueous
                        battery, its manufacture, and the
                        battery using the material
INVENTOR(S):
                        Hisayoshi, Kanji; Watarai, Yusuke
PATENT ASSIGNEE(S):
                        Mitsubishi Materials Corp., Japan
SOURCE:
                        Jpn. Kokai Tokkyo Koho, 10 pp.
                        CODEN: JKXXAF
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
                    KIND DATE APPLICATION NO. DATE
     PATENT NO.
                      ----
                                         _____
                                                                -----
    JP 2005100947 A2 20050414 JP 2004-206622 20040714
RITY APPLN. INFO.: JP 2003-208171 A 20030821
     _____
PRIORITY APPLN. INFO.:
    Cathode material for secondary nonaqueous battery, its
    manufacture, and the battery using the material
    The cathode material is a layer structured Li-Mn-Ni-Co composite oxide:
    Li[Li(1-2x-y)/3NixCoyMn(2-x-2y)/3] (0.2< x< 0.5; 0< yr< 0.2; and 2x+y >1).
    The cathode material is manufactured by reacting an aqueous solution of a Ni salt, a
    Co salt, and a Mn salt with a strong alkali aqueous solution to obtain a Ni-Co-Mn
    hydroxide; oxidizing the hydroxide to obtain a Ni-Co-Mn oxyhydroxide;
    mixing the oxyhydroxide with a Li compound to obtain a raw material mixture;
    and firing the mixture in atmospheric to obtain a Li transition metal oxide. The
    battery uses the above cathode material.
    secondary battery cathode lithium manganese nickel cobalt oxide
    manuf
    Battery cathodes
        (compns. and manufacture of cathode materials containing lithium manganese
        cobalt nickel oxides for secondary lithium batteries)
    Secondary batteries
        (lithium; compns. and manufacture of cathode materials containing lithium
       manganese cobalt nickel oxides for secondary lithium batteries
    845929-86-4P, Cobalt lithium manganese nickel oxide
     (Co0.15Li1.05Mn0.45Ni0.35O2) 849803-52-7P, Cobalt lithium manganese
    nickel oxide (Co0.05Li1.08Mn0.52Ni0.3502) 849803-54-9P, Cobalt lithium
    manganese nickel oxide (Co0.1Li1.07Mn0.48Ni0.3502)
                                                        849803-55-0P, Cobalt
    lithium manganese nickel oxide (Co0.05Li1.15Mn0.55Ni0.2502)
    849803-56-1P, Cobalt lithium manganese nickel oxide
     (Co0.05Li1.05Mn0.58Ni0.402)
    RL: DEV (Device component use); IMF (Industrial manufacture); PREP
     (Preparation); USES (Uses)
        (compns. and manufacture of cathode materials containing lithium manganese
       cobalt nickel oxides for secondary lithium batteries)
    ANSWER 63 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:300808 CAPLUS
DOCUMENT NUMBER:
                        142:376498
TITLE:
                        Method for regulating terminal voltage of cathode
                        during overdischarge and cathode active material for
                        lithium secondary battery
                        Chang, Sung-kyun; Hong, Seung-tae; Kim, Hyeong-jin;
INVENTOR(S):
                        Ryu, Duk-hyun; Goh, Eun-young; Lee, Ho-chun; Jeong,
                        Jun-yong; Yeon, Jin-hee
```

Lg Chem, Ltd., S. Korea

L3

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IT

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L3

PATENT ASSIGNEE(S):

SOURCE: PCT Int. Appl., 47 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

P	ATENT	NO.			KIN	D	DATE								D	ATE	
	2005								,			KR24			2	0040	924
	W:	AE, CN, GE, LR,	AG, CO, GH, LS,	AL, CR, GM, LT,	AM, CU, HR, LU,	AT, CZ, HU, LV,	AU, DE, ID, MA, PT,	AZ, DK, IL, MD,	DM, IN, MG,	DZ, IS, MK,	EC, JP, MN,	EE, KE, MW,	EG, KG, MX,	ES, KP, MZ,	FI, KZ, NA,	GB, LC, NI,	GD, LK, NO,
	R₩:	TM, BW, AZ, EE, SI,	TN, GH, BY, ES, SK,	TR, GM, KG, FI, TR,	TT, KE, KZ, FR,	TZ, LS, MD, GB,	UA,	UG, MZ, TJ, HU,	US, NA, TM, IE,	UZ, SD, AT, IT,	VC, SL, BE, LU,	VN, SZ, BG, MC,	YU, TZ, CH, NL,	ZA, UG, CY, PL,	ZM, ZM, CZ, PT,	ZW, ZW, DE, RO,	AM, DK, SE,
CI J	R 2005 N 1745 P 2006 P 1665	0305 490 5147	76		A T2		2006	0308 0511	,	CN 2	004- 005-	8000: 5182:	3043 84		2	0040 0040	924 924
PRIORI'	R:	AT, IE,	BE, SI,	CH, FI,	DE,	DK,		FR,	GB, CZ,	GR,	IT, HU, 003-	LI, PL, 6686	LU, SK 5 6	NL,	SE, A 2 A 2	MC, 0030 0030	PT, 926 926
TT M	-+h-d	£ ~ ~	~~~	1 -+ 4	n~ +	- ~m :	n n 1		. ~ ^	af a	a + h a	a . a.		~ ~		aaha	~~~ ~~

- TI Method for regulating terminal voltage of cathode during overdischarge and cathode active material for lithium secondary battery
- AB Disclosed is a method for regulating terminal voltage of a cathode during overdischarge. Also disclosed is a lithium secondary battery, which is low in capacity loss after overdischarge, having excellent capacity restorability after overdischarge and shows an effect of preventing a battery from swelling at a high temperature
- ST lithium secondary battery cathode active material
- IT Transition metal oxides
 - RL: DEV (Device component use); USES (Uses)

(lithium-containing; method for regulating terminal voltage of cathode during overdischarge and cathode active material for lithium secondary battery)

IT Secondary batteries

(lithium; method for regulating terminal voltage of cathode during overdischarge and cathode active material for lithium secondary battery)

· IT Battery cathodes

Electric potential

(method for regulating terminal voltage of cathode during overdischarge and cathode active material for lithium secondary battery)

105-58-8, ΙT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl Diethyl carbonate carbonate 623-53-0, Ethyl methyl carbonate 7791-03-9, Lithium perchlorate 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide (CoLiO2) 13824-63-0, Cobalt lithium phosphate colipo4 14283-07-9, Lithium 15365-14-7, Iron lithium phosphate felipo4 tetrafluoroborate 29935-35-1, Lithium 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 56525-42-9, Methyl hexafluoroarsenate propyl carbonate 135573-53-4, Cobalt lithium nickel oxide 90076-65-6 188651-74-3, Cobalt lithium manganese oxide co0-1lini0-1o2 188651-75-4, Lithium manganese nickel oxide ((Co, Mn) 2LiO4) 214536-41-1, Cobalt lithium manganese oxide (Li(Mn, Ni) 204) 607706-67-2, Cobalt lithium manganese nickel oxide

```
((Co, Mn, Ni) LiO2)
                        607706-68-3, Cobalt lithium manganese nickel oxide
     ((Co, Mn, Ni) 2LiO4)
     RL: DEV (Device component use); USES (Uses)
        (method for regulating terminal voltage of cathode during overdischarge
        and cathode active material for lithium secondary battery)
     555-31-7, Aluminum isopropoxide
ΙT
                                       2171-98-4, Zirconium isopropoxide
     12325-84-7, Lithium nickel oxide (Li2NiO2) 39300-70-4, Lithium nickel
                                                     51177-05-0, Chromium
             39336-10-2, Iron lithium nickel oxide
     lithium nickel oxide
                            59977-40-1, Lithium nickel strontium oxide
     131344-56-4, Cobalt lithium nickel oxide
                                                152991-98-5, Aluminum lithium
     nickel oxide
                   159967-11-0, Lithium magnesium nickel oxide 162684-16-4,
     Lithium manganese nickel oxide
                                      163294-87-9, Lithium nickel vanadium
            180984-62-7, Lithium nickel titanium oxide 191538-05-3, Copper
     lithium nickel oxide
                            197389-21-2, Aluminum lithium nickel oxide
     (Al0.03LiNi0.9702)
                          207986-09-2, Lithium magnesium nickel oxide
     (LiMq0.03Ni0.9702)
                          249756-69-2, Boron lithium nickel oxide
     635316-63-1, Lithium nickel carbonate oxide 656812-51-0, Lithium nickel
                  656812-52-1, Lithium nickel zirconium oxide
                                                                656812-53-2,
     Lithium nickel niobium oxide 656812-54-3, Lithium molybdenum nickel
             849341-90-8, Lithium nickel scandium oxide
                                                          849341-91-9, Cadmium
     lithium nickel oxide
                            849341-92-0, Lithium nickel borate oxide
     (Li2Ni0.97(BO3)0.0301.91)
     RL: MOA (Modifier or additive use); USES (Uses)
        (method for regulating terminal voltage of cathode during overdischarge
        and cathode active material for lithium secondary battery)
L3
     ANSWER 64 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2005:250643 CAPLUS
DOCUMENT NUMBER:
                         142:466364
TITLE:
                         Reactivity of Liy[NixCo1-2xMnx]O2 (x = 0.1, 0.2, 0.35,
                         0.45, and 0.5; y = 0.3, 0.5) with nonaqueous solvents
                         and electrolytes studied by ARC
                         Jiang, J.; Eberman, K. W.; Krause, L. J.; Dahn, J. R.
AUTHOR(S):
                         Department of Chemistry, Dalhousie University,
CORPORATE SOURCE:
                         Halifax, NS, B3H 3J5, Can.
SOURCE:
                         Journal of the Electrochemical Society (2005), 152(3),
                         A566-A569
                         CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER:
                         Electrochemical Society
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
REFERENCE COUNT:
                         22
                               THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ST
     cobalt lithium manganese nickel oxide cathode reactivity lithium
     battery
ΙT
     Secondary batteries
        (lithium; reactivity of LiNixCol-2xMnxO2 cathode material for lithium
        batteries with nonag. solvents and electrolytes)
TT
     Battery cathodes
     Reactivity (chemical)
        (reactivity of LiNixCol-2xMnxO2 cathode material for lithium
        batteries with nonaq. solvents and electrolytes)
ΙT
     Calorimetry
        (reactivity of LiNixCol-2xMnxO2 cathode material for lithium
        batteries with nonaq. solvents and electrolytes studied by ARC)
IT
     21324-40-3, Lithium hexafluorophosphate (LiPF6)
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); TEM (Technical or engineered material use); PROC (Process); USES
     (Uses)
        (electrolyte; reactivity of LiNixCol-2xMnxO2 cathode material for
        lithium batteries with nonaq. solvents and electrolytes)
IT
     96-49-1, Ethylene carbonate
                                  105-58-8, Diethyl carbonate
                                                                 128975-24-6,
     Lithium manganese nickel oxide (LiMn0.5Ni0.502)
                                                       170110-41-5, Cobalt
     lithium manganese nickel oxide (Co0.6LiMn0.2Ni0.2O2)
                                                            227623-80-5, Cobalt
     lithium manganese nickel oxide (Co0.8LiMn0.1Ni0.102) 405890-05-3
     , Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2)
```

493394-61-9, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.35Ni0.35O2) RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES

(reactivity of LiNixCol-2xMnxO2 cathode material for lithium batteries with nonaq. solvents and electrolytes)

L3 ANSWER 65 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:219682 CAPLUS

DOCUMENT NUMBER: 142:264437

TITLE: Preparation of lithium transition metals oxides from

carbonate precursors and their use as cathode material

INVENTOR(S): Liu, Huiquan; Wang, Chuanfu

PATENT ASSIGNEE(S): Peop. Rep. China

SOURCE: U.S. Pat. Appl. Publ., 6 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 7

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
PATENT NO. US 2005053545 CN 1500732 US 2004223906 US 2005037263 PRIORITY APPLN. INFO.:	KIND A1 A A1 A1	DATE 20050310 20040602 20041111 20050217	US 2003-717236 CN 2002-151991 US 2004-841760 US 2004-918580 CN 2002-151991 CN 2003-126555 CN 2003-139607 CN 2003-140196 CN 2003-140216 US 2003-717236		20031119 20021119 20040508 20040813 20021119 20030509 20030623 20030815 20030815 20031119
			US 2003-733018 US 2004-770630		20031210 20040202
			US 2003-733018	A2	20031210
			US 2004-823931 US 2004-841760		20040414 20040508

ST carbonate precursor lithium transition metal oxide prepn cathode battery

IT Secondary batteries

(lithium; preparation of lithium transition metals oxides from carbonate precursors and their use as cathode material)

IT Battery cathodes

(preparation of lithium transition metals oxides from carbonate precursors and their use as cathode material)

IT 182442-95-1P, Cobalt lithium manganese nickel oxide 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2)

RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)

(cathode material; preparation of lithium transition metals oxides from carbonate precursors and their use as cathode material)

L3 ANSWER 66 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:57650 CAPLUS

DOCUMENT NUMBER: 142:159501

TITLE: Lithium secondary battery

INVENTOR(S): Akabane, Naoto; Wada, Shuichi; Toshiro, Hiroyuki

PATENT ASSIGNEE(S): Hitachi Maxell Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

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PATENT NO.
                        KIND DATE
                                          APPLICATION NO.
                                                                 DATE
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                                           -----
                                                                  _____
     JP 2005019149
                         A2
                                20050120 JP 2003-181330
                                                                 20030625
PRIORITY APPLN. INFO.:
                                           JP 2003-181330
                                                                  20030625
ΤI
     Lithium secondary battery
AΒ
     The battery has a cathode, containing a 1st Li Mn Ni composite
     oxide: Li 1+x+\alpha Ni(1-x-y+\delta)/2MyMn(1-x-y-\delta)O2 (M = Cr, Fe,
     Co, and/or Al; x = 0-0.1; y = 0-0.4; \alpha = -0.05-0.05; and \delta =
     -0.1-0.1) and a 2nd Li Co composite oxide: LixCoO2 (x = 0.98-1.02); where
     the mass ratio of the 1st oxide to the 2nd oxide is ≤50 mass%. and
     the average particle of the 1st oxide is \leq 1/2 of the 2nd oxide.
ST
     secondary lithium battery cathode lithium manganese nickel
     composite oxide; battery cathode lithium cobalt composite oxide
     Battery cathodes
ΙT
        (cathodes containing lithium manganese nickel composite oxides and lithium
        cobalt composite oxides for secondary lithium batteries)
ΙT
     Secondary batteries
        (lithium; cathodes containing lithium manganese nickel composite oxides and
        lithium cobalt composite oxides for secondary lithium batteries
IT
     12190-79-3, Cobalt lithium oxide (CoLiO2) 128975-24-6, Lithium manganese
     nickel oxide (LiMn0.5Ni0.502) 493326-93-5, Cobalt lithium manganese
     nickel oxide (Co0.33LiMn0.34Ni0.33O2) 532934-40-0, Cobalt
     lithium manganese nickel oxide (Co0.16LiMn0.42Ni0.42O2)
     RL: DEV (Device component use); USES (Uses)
        (cathodes containing lithium manganese nickel composite oxides and lithium
        cobalt composite oxides for secondary lithium batteries)
    ANSWER 67 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
                        2004:1149397 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         142:264289
TITLE:
                        Layered (1-x-y)LiNi1/2Mn1/2O2·xLi[Li1/3Mn2/3]
                         02 \cdot yLiCoO2 (0 \le x = y \le 0.3 and
                         x+y=0.5) Cathode Materials
                         Zhang, Liangi; Takada, Kazunori; Ohta, Narumi; Fukuda,
AUTHOR(S):
                         Katsutoshi; Osada, Minoru; Wang, Lianzhou; Sasaki,
                         Takayoshi; Watanabe, Mamoru
                         Advanced Materials Laboratory, National Institute for
CORPORATE SOURCE:
                        Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
                         Journal of the Electrochemical Society (2005), 152(1),
SOURCE:
                        A171-A178
                        CODEN: JESOAN; ISSN: 0013-4651
                         Electrochemical Society
PUBLISHER:
DOCUMENT TYPE:
                         Journal
                         English
LANGUAGE:
REFERENCE COUNT:
                               THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS
                         45
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     layered alkali metal transition metal oxide lithium battery
     cathode; lithium secondary battery cathode material layered
     crystal electrochem cycling
     Electric capacitance
ΙT
        (charge-discharge capacity vs. voltage of assembled batteries
        ; of layered lithium manganese nickel oxides)
TT
     Secondary batteries
        (lithium; of layered lithium manganese nickel oxides)
IT
     Battery cathodes
        (materials for; crystal structure, discharge capacity, and
        electrochem.)
IT
     845929-85-3P, Cobalt lithium manganese nickel oxide
     (Co0.05Li1.02Mn0.48Ni0.4502)
     RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
     preparation); PREP (Preparation); USES (Uses)
        (x=y=0.05; crystal structure, discharge capacity, and electrochem.)
     845929-84-2P, Cobalt lithium manganese nickel oxide
IT
     (Co0.1Li1.03Mn0.47Ni0.402)
     RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
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preparation); PREP (Preparation); USES (Uses)
        (x=y=0.1; crystal structure, discharge capacity, and electrochem.)
    ANSWER 68 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2004:1080129 CAPLUS
DOCUMENT NUMBER:
                        142:59721
TITLE:
                        Cathode active mass for secondary lithium
                        battery, its manufacture, and the
                        battery
INVENTOR(S):
                        Shiozaki, Ryuji; Fujii, Akihiro; Nukuta, Toshiyuki
PATENT ASSIGNEE(S):
                        Yuasa Corporation, Japan
SOURCE:
                        Jpn. Kokai Tokkyo Koho, 20 pp.
                        CODEN: JKXXAF
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
    PATENT NO.
                      KIND DATE
                                         APPLICATION NO.
                                                                DATE
                                                                _____
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                               -----
                                          -----
                        A2
    JP 2004355986
                               20041216
                                           JP 2003-153615
                                                                20030530
                                           JP 2003-153615
PRIORITY APPLN. INFO.:
                                                                20030530
    Cathode active mass for secondary lithium battery, its
    manufacture, and the battery
    secondary lithium battery cathode active mass manuf carbonaceous
    material; transition metal cathode active mass manuf secondary lithium
    battery
    Battery cathodes
        (carbonaceous materials in manufacture of transition metal compound cathode
        active mass from aqueous solns. for secondary lithium batteries)
    Carbon black, uses
    RL: NUU (Other use, unclassified); USES (Uses)
        (carbonaceous materials in manufacture of transition metal compound cathode
        active mass from aqueous solns. for secondary lithium batteries)
    214473-76-4P, Cobalt lithium manganese nickel oxide
     (Co0.9LiMn0.05Ni0.0502)
                              227623-80-5P, Cobalt lithium manganese nickel
    oxide (Co0.8LiMn0.1Ni0.1O2) 404904-11-6P, Cobalt lithium manganese
    nickel oxide (Co0.4LiMn0.3Ni0.3O2) 632287-14-0P, Cobalt lithium
    manganese nickel oxide (Co0.02LiMn0.49Ni0.4902)
    RL: IMF (Industrial manufacture); PREP (Preparation)
        (carbonaceous materials in manufacture of transition metal compound cathode
        active mass from aqueous solns. for secondary lithium batteries)
    ANSWER 69 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2004:1076998 CAPLUS
DOCUMENT NUMBER:
                        142:41536
TITLE:
                        Secondary battery
INVENTOR(S):
                        Yamamoto, Akira
PATENT ASSIGNEE(S):
                        Sony Corp., Japan
                        Jpn. Kokai Tokkyo Koho, 29 pp.
SOURCE:
                        CODEN: JKXXAF
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        Japanese
FAMILY ACC. NUM. COUNT:
                        1
PATENT INFORMATION:
                                                                         8
```

L3

IT

ΙT

IT

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
TD 000425.000		20041216			20040420
JP 2004356092 PRIORITY APPLN. INFO.:	A2	20041216	JP 2004-134780 JP 2003-127162	Δ	20040428
TI Secondary battery			01 2003 127102	A	20030302

The battery, especially a secondary lithium battery, has an AR electrolyte, a cathode, and an anode, whose capacity is a sum of a capacity component by intercalation and decalation of a light metal and a capacity component by deposition and dissoln. of the light metal; where the cathode contains a composite oxide: LixM11-yM2yO2-z [M1 = Co and/or

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Ni; M2 = metal element(s) whose atomic number ≥11 (excluding M1 element);
     1 < x < 1.35; 0 \le y < 1.0; z = -0.1-0.1 or LiaMn2-bM3bO4-d [M3 = metal
     element(s) whose atomic number ≥11 (excluding Mn); 1 <a <1.35; 0
     \leqb <0.5; z = -0.2-0.2]. Preferably, the electrolyte contains
     tetrahydropyran, THF, 2-Me THF, 1,3-dioxolane, 1,2-diethoxy ethane,
     1,3-dimethoxy ethane, and/or their derivs.
     secondary battery cathode lithium manganese oxide lithium cobalt
     oxide
     Battery cathodes
        (cathodes containing lithium transition metal composite oxides for
        secondary lithium batteries)
     Secondary batteries
        (lithium; cathodes containing lithium transition metal composite oxides for
        secondary lithium batteries)
     96-47-9, 2-Methyl tetrahydrofuran 96-49-1, Ethylene carbonate
     109-99-9, uses 110-71-4 142-68-7, Tetrahydropyrane 616-38-6,
     Dimethyl carbonate 646-06-0, 1,3-Dioxolane 132825-97-9, Lithium
     manganese oxide (Li1.15Mn2O4) 136574-96-4, Cobalt lithium oxide
     (CoLi1.1502) 136574-97-5, Cobalt lithium oxide (CoLi1.202)
     156098-40-7, Cobalt lithium oxide (CoLi1.0502) 247565-42-0,
     Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.4Ni0.4O2)
     263700-81-8, Cobalt lithium oxide (CoLi1.0602) 807654-76-8, Cobalt
     lithium oxide (CoLi1.3202) 807654-78-0, Aluminum lithium nickel oxide
     (Al0.05Lil.05Ni0.9502)
                               807654-80-4, Aluminum lithium nickel oxide
     (Al0.05Li1.06Ni0.9502)
                               807654-83-7, Aluminum lithium nickel oxide
     (Al0.05Li1.15Ni0.9502)
                               807654-86-0, Aluminum lithium nickel oxide
     (Al0.05Li1.2Ni0.9502)
                              807654-89-3, Aluminum lithium nickel oxide
     (Al0.05Li1.32Ni0.9502) 807654-92-8, Cobalt lithium manganese
     nickel oxide (Co0.2Li1.06Mn0.4Ni0.4O2) 807654-96-2, Cobalt
     lithium manganese nickel oxide (Co0.2Li1.15Mn0.4Ni0.4O2)
     807654-99-5, Cobalt lithium manganese nickel oxide
     (Co0.2Li1.2Mn0.4Ni0.4O2) 807655-02-3, Cobalt lithium manganese
     nickel oxide (Co0.2Lil.32Mn0.4Ni0.402)
                                                807655-05-6 807655-08-9
     807655-11-4
                   807655-13-6
                                  807655-15-8
                                                 807655-17-0, Cobalt lithium
     manganese nickel oxide (Co0.33Li1.15Mn0.33Ni0.33O2)
                                                            807655-19-2, Cobalt
     lithium manganese nickel oxide (Co0.2Li1.15Mn0.35Ni0.45O2)
                                                                     807655-21-6,
     Cobalt lithium manganese nickel oxide (Co0.4Li1.15Mn0.2Ni0.4O2)
     807655-23-8, Cobalt lithium manganese nickel oxide
     (Co0.6Li1.15Mn0.2Ni0.2O2)
     RL: DEV (Device component use); USES (Uses)
        (cathodes containing lithium transition metal composite oxides for
        secondary lithium batteries)
     ANSWER 70 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
                          2004:1059702 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                          142:25916
TITLE:
                          Lithium metal oxide cathodes for nonaqueous lithium
                          batteries
                          Whitfield, Pamela; Davidson, Isobel
INVENTOR(S):
                          National Research Council of Canada, Can.
PATENT ASSIGNEE(S):
SOURCE:
                          PCT Int. Appl., 32 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:
                          Patent
                          English
LANGUAGE:
FAMILY ACC. NUM. COUNT:
                          1
PATENT INFORMATION:
                         KIND DATE APPLICATION NO.
                                                                      DATE
     PATENT NO.
                         ----
                                             -----
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                                                                      -----
     WO 2004107480 A2 20041209 WO 2004-CA770 WO 2004107480 A3 20051103
                                                                      20040527
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
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ST

IT

ΙT

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TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
             AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
             EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
             SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
             SN, TD, TG
     CA 2527207
                          AA
                                20041209
                                            CA 2004-2527207
                                                                   20040527
                          A2
                                            EP 2004-734982
     EP 1629553
                                20060301
                                                                   20040527
             AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR
     CN 1795574
                                20060628
                                            CN 2004-80014805
                          Α
PRIORITY APPLN. INFO.:
                                            US 2003-473476P
                                                                P 20030528
                                            WO 2004-CA770
                                                                W 20040527
ΤI
     Lithium metal oxide cathodes for nonaqueous lithium batteries
AB
     A lithium metal oxide pos. electrode for a non-aqueous lithium cell or
     battery is disclosed. The pos. electrode comprises a lithium
     metal oxide having a layered structure and a general formula, after
     in-situ or ex-situ oxidation, of LixMnyM1-yO2 wherein 0 \le x \le
     0.20, 0 < y < 1, manganese is in the 4+ oxidation state, and M is one or more
     the first row transition metals: Ti, V, Cr, Mn, Fe, Co, Ni or Cu, or other
     specific other canons: Al, Mg, Mo, W, Ta, Si, Sn, Zr, Be, Ca, Ga, and P,
     which have an appropriate ionic radii to be inserted in to the structure
     without unduly disrupting it. Usage of the materials of the invention in
     lithium cells and batteries is disclosed. A process is
     disclosed for formation of materials of the invention.
ST
     lithium metal oxide cathode nonag lithium battery
ΙT
     Battery cathodes
        (lithium metal oxide cathodes for nonag. lithium batteries)
IT
     Secondary batteries
        (lithium; lithium metal oxide cathodes for nonag. lithium
        batteries)
ΙT
     53027-29-5, Iron lithium manganese oxide
                                                61179-01-9, Aluminum lithium
    manganese oxide
                      133782-19-1, Lithium manganese vanadium oxide
     138758-08-4, Lithium manganese phosphorus oxide
                                                      153327-00-5, Gallium
     lithium manganese oxide 153327-05-0, Lithium manganese tin oxide
     162684-16-4, Lithium manganese nickel oxide
                                                   175786-46-6, Lithium
     magnesium manganese oxide 191538-04-2, Copper lithium manganese oxide
     201534-12-5, Lithium manganese zirconium oxide
                                                      204450-96-4, Chromium
     lithium manganese oxide 208394-04-1, Lithium manganese titanium oxide
     208394-05-2, Lithium manganese molybdenum oxide
                                                       214536-41-1, Cobalt
     lithium manganese oxide 245085-55-6, Calcium lithium manganese oxide
     252568-43-7, Lithium manganese tungsten oxide
                                                    252568-44-8, Lithium
    manganese silicon oxide 393802-01-2, Beryllium lithium manganese oxide
     393802-06-7, Lithium manganese tantalum oxide
     RL: DEV (Device component use); USES (Uses)
        (lithium metal oxide cathodes for nonag. lithium batteries)
IT
    101920-93-8P, Cobalt lithium nickel oxide (Co0.5LiNi0.502)
                                                                  448897-00-5P.
    Lithium manganese nickel oxide (Li1.2Mn0.4Ni0.4O2)
                                                          677027-33-7P, Cobalt
     lithium manganese oxide (Co0.4Li1.2Mn0.402) 801287-08-1P, Cobalt
     lithium manganese nickel oxide ((Co, Ni) 0.4Li1.2Mn0.4O2)
                                                               801287-09-2P,
    Cobalt lithium manganese nickel oxide (Co0.1Li1.2Mn0.4Ni0.302)
     801287-10-5P, Cobalt lithium manganese nickel oxide
     (Co0.2Li1.2Mn0.4Ni0.2O2)
                               801287-11-6P, Cobalt lithium manganese nickel
    oxide (Co0.3Li1.2Mn0.4Ni0.102)
                                      801287-13-8P, Cobalt lithium manganese
    nickel oxide (Co0.26Li1.16Mn0.32Ni0.26O2)
                                                 801287-16-1P
                                                                801287-18-3P,
    Cobalt lithium manganese nickel oxide (Co0.3Li1.14Mn0.27Ni0.302)
     801287-20-7P, Cobalt lithium manganese nickel oxide
     (Co0.41Li1.06Mn0.12Ni0.4102)
                                   801287-22-9P
                                                   801287-24-1P
    RL: DEV (Device component use); SPN (Synthetic preparation); PREP
     (Preparation); USES (Uses)
        (lithium metal oxide cathodes for nonaq. lithium batteries)
L3
    ANSWER 71 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2004:1020204 CAPLUS
DOCUMENT NUMBER:
                         142:9225
TITLE:
                         Nonaqueous electrolyte secondary battery and
```

charge/discharge system thereof

INVENTOR(S): Watanabe, Shoichiro; Nagayama, Masatoshi; Kuranaka, So

Matsushita Electric Industrial Co. Ltd., Japan

SOURCE: PCT Int. Appl., 37 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT ASSIGNEE(S):

PA	TENT	NO.			KIN	D					ICAT				Di	ATE	
WO	2004	1027	01		A1										2	0040	511
	W:						AU,										
		CN,	CO,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ,	EC,	EE,	EG,	ES,	FI,	GB,	GD,
		GE,	GH,	GM,	HR,	HU,	ID,	IL,	IN,	IS,	KE,	KG,	ΚP,	KR,	ΚZ,	LC,	LK,
		LR,	LS,	LT,	LU,	LV,	MA,	MD,	MG,	MK,	MN,	MW,	MX,	ΜZ,	NA,	NI,	NO,
		NZ,	OM,	PG,	PH,	PL,	PT,	RO,	RU,	SC,	SD,	SE,	SG,	SK,	SL,	SY,	ТJ,
		•	•	•	•		UA,		•	•	•	•	•	•			
	RW:	BW,	GH,	GM,	KE,	LS,	MW,	ΜZ,	NA,	SD,	SL,	SZ,	TZ,	UG,	ZM,	ZW,	AM,
					•		RU,			•	•	•					
					•		GR,	•	•	•	•	•	•				
			•		BF,	ВJ,	CF,	CG,	CI,	CM,	GA,	GN,	GQ,	G₩,	ML,	MR,	NE,
			TD,												_		
	2004																
	1735						2006										
EP	1655				A1		2006	0510		EP 2	004-	7322	13		2	0040	511
		DE,															
PRIORIT	Y APP	LN.	INFO	.:						JP 2					_		
										WO 2	-						
REFEREN	CE CO	UNT:			12	_											OR THIS
						R	ECOR.	D. A	LL C	ITAT:	IONS	AVA	ILAB:	LE I	N TH	E RE	FORMAT

- TI Nonaqueous electrolyte secondary battery and charge/discharge system thereof
- The disclosed nonag. electrolyte secondary comprises a pos. electrode AB composed of a pos. electrode mix layer, a neg. electrode composed of a neq. electrode mix layer, a separator or a lithium ion-conductive porous film interposed between the pos. electrode and the neg. electrode, and a lithium ion-conductive nonaq. electrolyte. The pos. electrode mix layer contains a pos. electrode active material composed of a lithium-transition metal composite oxide, and the lithium-transition metal composite oxide contains lithium, a transition metal and a metal other than the transition metal. The neg. electrode mix layer contains a neg. electrode active material composed of a carbon material. In the region where the pos. electrode mix layer and the neg. electrode mix layer face each other, the ratio (R: Wp/Wn) of the weight of the pos. electrode active material (Wp) contained in the pos. electrode mix layer per unit area to the weight of the neg. electrode active material (Wn) contained in the neg. electrode mix layer per unit area is 1.3-2.2. In the normal operation, the charging final voltage of this nonag. electrolyte secondary battery is set at 4.25-4.5 V.
- ST lithium secondary battery electrode active substance ratio
- IT Battery anodes

(lithium secondary battery; graphite as anode active substance for)

IT Battery cathodes

(lithium secondary battery; lithium transition metal oxides as cathode active substances for)

IT Secondary batteries

(lithium; charging voltage limites for)

IT 7782-42-5, Graphite, uses

RL: TEM (Technical or engineered material use); USES (Uses) (anode active substance for lithium secondary battery)

IT 144419-56-7, Cobalt lithium magnesium oxide (Co0.95LiMg0.0502)

372491-83-3, Aluminum cobalt lithium magnesium oxide

(Al0.01Co0.94LiMg0.0502) 372492-00-7, Aluminum cobalt lithium magnesium

oxide (Al0.01Co0.98LiMg0.0102) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 405890-08-6, Aluminum lithium manganese nickel oxide (AlO.1LiMnO.45NiO.45O2) 422520-44-3, Lithium manganese nickel titanium oxide (LiMn0.45Ni0.45Ti0.102) 477700-15-5, Cobalt lithium oxide (Co0.99LiO2) 478814-69-6, Aluminum cobalt lithium magnesium oxide (Al0.05Co0.9LiMg0.0502) 489431-33-6, Aluminum cobalt lithium oxide (Al0.01Co0.98LiO2) 709654-46-6 719276-54-7, Aluminum cobalt lithium magnesium oxide (Al0.01Co0.94Li1.01Mg0.0502) 798575-07-2, Aluminum cobalt lithium magnesium oxide (Al0.01Co0.94Li1.02Mg0.0502) 798575-08-3, Aluminum cobalt lithium magnesium oxide (Al0.01Co0.94Li1.03Mq0.05O2) Aluminum cobalt lithium magnesium oxide (Al0.05Co0.85LiMg0.102) 798575-11-8, Aluminum cobalt lithium magnesium oxide (Al0.02Co0.88LiMq0.102) 798575-12-9, Lithium magnesium manganese nickel oxide (LiMg0.1Mn0.45Ni0.4502) 798575-13-0, Lithium manganese nickel strontium oxide (LiMn0.45Ni0.45Sr0.102) RL: TEM (Technical or engineered material use); USES (Uses) (cathode active substance for lithium secondary battery)

L3 ANSWER 72 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:1020203 CAPLUS

DOCUMENT NUMBER: 142:9224

TITLE: Nonaqueous electrolyte battery

INVENTOR(S): Nakagawa, Hiroe; Inamasu, Tokuo; Nukuda, Toshiyuki

PATENT ASSIGNEE(S): Yuasa Corporation, Japan SOURCE: PCT Int. Appl., 30 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

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DATE
    PATENT NO.
                       KIND
                                        APPLICATION NO.
                                                               DATE
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                              -----
                                       WO 2004-JP3612
    WO 2004102700
                        A1
                              20041125
                                                               20040318
        W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
            CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
            GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
            LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
            NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
            TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
        RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
            BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,
            ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,
            SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
            TD, TG
    CN 1788370
                        Α
                              20060614
                                          CN 2004-80012785
                                                                20040318
PRIORITY APPLN. INFO.:
                                          JP 2003-137867
                                                             A 20030515
                                          JP 2003-166455
                                                             A 20030611
REFERENCE COUNT:
                       16
                             THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
                             RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
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TΙ Nonaqueous electrolyte battery

AB A nonaq. electrolyte battery excelling in battery performance in high-temperature environment. In particular, the disclosed nonaq. electrolyte battery including a pos. electrode and a neg. electrode and, interposed therebetween, a nonaq. electrolyte containing at least one cyclic carbonate having a carbon to carbon π bond and at least one cyclic organic compound having an S=O bond, is characterized in that the main component of pos. electrode active substance as a constituent of the pos. electrode is a sinterred oxide of the formula Lim NibM1-bO2 (wherein M represents at least one element of Groups 1 to 16 [sic] excluding Ni, Li and O, and $0 \le m \le 1.1$; 0 < b < 1) having lamellar rock salt crystal structure. Preferred oxide has the formula LimMnaNibCocO2 ($0 \le m \le 1.1$; a+b+c = 1; $|a-b| \le$ 0.05; a $\neq 0$ and b $\neq 0$; $0 \leq c < 1$). ST

nonaq electrolyte battery cathode active oxide

```
Battery cathodes
        (lithium battery; lamellar structured mixed oxides as cathode
        active substance for)
IΤ
     Secondary batteries
        (lithium, nonaq. electrolyte; electrolyte containing cyclic carbonates and
        sulfonyl compds. and lithium-containing mixed oxides for)
ΙT
     532934-40-0P, Cobalt lithium manganese nickel oxide
     (Co0.16LiMn0.42Ni0.42O2)
     RL: SPN (Synthetic preparation); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (cathode active substance for nonaq. electrolyte lithium secondary
IT
     128975-24-6, Lithium manganese nickel oxide (Li2MnNiO4)
                                                             193215-51-9,
     Cobalt lithium manganese nickel oxide (Co0.15LiMn0.3Ni0.5502)
     214473-76-4, Cobalt lithium manganese nickel oxide (Co0.9LiMn0.05Ni0.05O2)
     390362-01-3, Cobalt lithium manganese nickel oxide (Co0.5LiMn0.25Ni0.25O2)
     686740-96-5, Cobalt lithium manganese nickel oxide
     (Co0.67LiMn0.17Ni0.17O2)
                               763122-46-9, Cobalt lithium manganese nickel
     oxide (Co0.84LiMn0.08Ni0.0802)
     RL: TEM (Technical or engineered material use); USES (Uses)
        (cathode active substance for nonag, electrolyte lithium secondary
       battery)
ΙT
     126-33-0, Sulfolane 872-36-6, Vinylene carbonate
                                                      1120-71-4,
     1,3-Propanesultone 1633-83-6, 1,4-Butanesultone 2171-74-6,
     1,3-Benzodioxol-2-one 3741-38-6, Ethylene sulfite 4427-96-7,
     Vinylethylene carbonate
     RL: TEM (Technical or engineered material use); USES (Uses)
        (lithium secondary battery nonaq. electrolyte composition containing)
    ANSWER 73 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                        2004:1018493 CAPLUS
DOCUMENT NUMBER:
                        142:9180
TITLE:
                        Lithium manganate and lithium-transition metal
                        manganate spinels as cathodes for secondary lithium
                        batteries with nonaqueous electrolytes
INVENTOR(S):
                        Nakanishi, Naoya; Satoh, Kouichi; Kitao, Hideki;
                        Akita, Hiroyuki; Funahashi, Atsuhiro; Nohma, Toshiyuki
PATENT ASSIGNEE(S):
                        Sanyo Electric Co. Ltd., Japan
SOURCE:
                        Fr. Demande, 27 pp., Division of Fr. Demande Appl. No.
                        2003/11876.
                        CODEN: FRXXBL
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        French
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
    PATENT NO.
                        KIND DATE APPLICATION NO.
                                                               DATE
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                                          _____
    FR 2855328
                       A1
                               20041126 FR 2004-6108
                                                                 20040607
                               20040430
     JP 2004134245
                       A2
                                          JP 2002-297738
                                                               20021010
    FR 2845823
                        A1 20040416
                                          FR 2003-11876
                                                                 20031010
                        B1
    FR 2845823
                              20050805
PRIORITY APPLN. INFO.:
                                          JP 2002-297738
                                                             A 20021010
                                          FR 2003-11876
                                                             A3 20031010
TΙ
    Lithium manganate and lithium-transition metal manganate spinels as
    cathodes for secondary lithium batteries with nonaqueous
    electrolytes
AΒ
    A secondary battery with a nonaq. electrolyte, especially fabricated
    as a sheet, consists of a carbon-based anode, a separator, a nonaq.
```

ΙT

electrolyte, and a cathode composed of a mixture of: (1) a lithium manganese spinel oxide of general formula Li1+zMn2O4 (z = 0-0.2), and (2) a composite lithium-transition metal spinel oxide of general formula LiNi1-x-yCoxMnyO2 (y = 0.1-0.6; x + y = 0.5-1.0). The compns. also contain a binder for the battery cathode consisting of polyvinylidene difluoride, at a 2-10 weight% concentration. The thickness of ratio of the separator to the battery cathode is 0.15-0.9:1. A

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preferred anode is graphite coated on a low-crystallinity carbon; a
     preferred cathode is a mixture of LiMn2O4 and LiCoMnNiO2 (especially
     LiNi0.4Co0.3Mn0.3O2).
     nonaq electrolyte secondary lithium battery; lithium manganate
     oxide spinel battery cathode nonag electrolyte; graphite anode
     nonaq electrolyte secondary lithium battery
     Battery anodes
        (carbon-graphite composite; lithium manganate and lithium-transition
        metal manganate spinels as cathodes for secondary lithium
        batteries with nonag. electrolytes)
     Battery cathodes
        (lithium manganate and lithium-transition metal manganate spinels as
        cathodes for secondary lithium batteries with nonaq.
        electrolytes)
     Fluoropolymers, uses
     RL: DEV (Device component use); USES (Uses)
        (lithium manganate and lithium-transition metal manganate spinels as
        cathodes for secondary lithium batteries with nonaq.
        electrolytes)
     Spinel-type crystals
        (lithium manganate-type, battery cathodes; lithium manganate
        and lithium-transition metal manganate spinels as cathodes for
        secondary lithium batteries with nonag. electrolytes)
     Battery electrolytes
        (nonag.; lithium manganate and lithium-transition metal manganate
        spinels as cathodes for secondary lithium batteries with
        nonaq. electrolytes)
     12057-17-9, Lithium manganese oxide (LiMn2O4) 607706-67-2,
     Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO2) 609349-41-9,
     Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.302)
     RL: DEV (Device component use); USES (Uses)
        (battery cathodes containing; lithium manganate and
        lithium-transition metal manganate spinels as cathodes for secondary
        lithium batteries with nonag. electrolytes)
     24937-79-9, Polyvinylidene difluoride
     RL: DEV (Device component use); USES (Uses)
        (binder, for fabrication of battery cathodes; lithium
        manganate and lithium-transition metal manganate spinels as cathodes
        for secondary lithium batteries with nonaq. electrolytes)
     7440-44-0, Carbon, uses
                              7782-42-5, Graphite, uses
     RL: DEV (Device component use); USES (Uses)
        (carbon composites with, battery anodes; lithium manganate
        and lithium-transition metal manganate spinels as cathodes for
        secondary lithium batteries with nonag. electrolytes)
     21324-40-3, Lithium hexafluorophosphate
     RL: DEV (Device component use); TEM (Technical or engineered material
     use); USES (Uses)
        (electrolyte; lithium manganate and lithium-transition metal manganate
        spinels as cathodes for secondary lithium batteries with
        nonaq. electrolytes)
     9003-07-0, Polypropylene
     RL: DEV (Device component use); USES (Uses)
        (film, battery separators; lithium manganate and
        lithium-transition metal manganate spinels as cathodes for secondary
        lithium batteries with nonaq. electrolytes)
     ANSWER 74 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2004:1018492 CAPLUS
DOCUMENT NUMBER:
                         142:9179
TITLE:
                         Lithium manganate and lithium-transition metal
                         manganate spinels as cathodes for secondary lithium
                         batteries with nonaqueous electrolytes
INVENTOR(S):
                         Nakanishi, Naoya; Satoh, Kouichi; Kitao, Hideki;
                         Akita, Hiroyuki; Funahashi, Atsuhiro; Nohma, Toshiyuki
                         Sanyo Electric Co. Ltd., Japan
PATENT ASSIGNEE(S):
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Fr. Demande, 27 pp., Division of Fr. Demande Appl. No.

ST

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L3

SOURCE:

2003/11876. CODEN: FRXXBL

DOCUMENT TYPE: Patent LANGUAGE: French

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2855327	A1	20041126	FR 2004-6107	20040607
JP 2004134245	A2	20040430	JP 2002-297738	20021010
FR 2845823	A1	20040416	FR 2003-11876	20031010
FR 2845823	В1	20050805		
PRIORITY APPLN. INFO.:			JP 2002-297738	A 20021010
			FR 2003-11876	A3 20031010

- TI Lithium manganate and lithium-transition metal manganate spinels as cathodes for secondary lithium batteries with nonaqueous electrolytes
- AB A secondary battery with a nonaq. electrolyte, especially fabricated as a sheet, consists of a carbon-based anode, a separator, a nonaq. electrolyte, and a cathode composed of a mixture of: (1) a lithium manganese spinel oxide of general formula Li1+zMn2O4 (z = 0-0.2), and (2) a composite lithium-transition metal manganate spinel oxide of general formula LiNi1-x-yCoxMnyO2 (y = 0.1-0.6; x + y = 0.5-1.0). The thickness of ratio of the separator to the battery cathode is 0.15-0.9:1. A preferred anode is graphite coated on a low-crystallinity carbon; a preferred cathode is a mixture of LiMn2O4 and LiCoMnNiO2 (especially LiNiO.4Co0.3Mn0.3O2).
- ST nonaq electrolyte secondary lithium battery; lithium manganate oxide spinel battery cathode nonaq electrolyte; graphite anode nonaq electrolyte secondary lithium battery
- IT Battery anodes

(carbon-graphite composites; lithium manganate and lithium-transition metal oxide spinels as cathodes for secondary lithium batteries with nonaq. electrolytes)

IT Battery cathodes

Secondary battery separators

(lithium manganate and lithium-transition metal oxide spinels as cathodes for secondary lithium batteries with nonaq. electrolytes)

IT Fluoropolymers, uses

RL: DEV (Device component use); USES (Uses)

(lithium manganate and lithium-transition metal oxide spinels as cathodes for secondary lithium batteries with nonaq. electrolytes)

IT Spinel-type crystals

(lithium manganate-type, battery cathodes; lithium manganate and lithium-transition metal oxide spinels as cathodes for secondary lithium batteries with nonaq. electrolytes)

IT Battery electrolytes

(nonaq.; lithium manganate and lithium-transition metal oxide spinels
as cathodes for secondary lithium batteries with nonaq.
electrolytes)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 607706-67-2, Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO2) 609349-41-9, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.3O2)

RL: DEV (Device component use); USES (Uses)

(battery cathodes containing; lithium manganate and lithium-transition metal oxide spinels as cathodes for secondary lithium batteries with nonaq. electrolytes)

IT 24937-79-9, Polyvinylidene difluoride

RL: DEV (Device component use); USES (Uses)

(binder, battery separators containing; lithium manganate and lithium-transition metal oxide spinels as cathodes for secondary lithium batteries with nonaq. electrolytes)

IT 7782-42-5, Graphite, uses

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RL: DEV (Device component use); USES (Uses)
        (carbon composites with, battery anodes; lithium manganate
        and lithium-transition metal oxide spinels as cathodes for secondary
        lithium batteries with nonaq. electrolytes)
TT
     21324-40-3, Lithium hexafluorophosphate
     RL: DEV (Device component use); TEM (Technical or engineered material
     use); USES (Uses)
        (electrolyte; lithium manganate and lithium-transition metal oxide
        spinels as cathodes for secondary lithium batteries with
        nonaq. electrolytes)
TΤ
     9003-07-0, Polypropylene
     RL: DEV (Device component use); USES (Uses)
        (film, battery separators; lithium manganate and
        lithium-transition metal oxide spinels as cathodes for secondary
        lithium batteries with nonaq. electrolytes)
     7440-44-0, Carbon, uses
IT
     RL: DEV (Device component use); USES (Uses)
        (graphite composites with, battery anodes; lithium manganate
        and lithium-transition metal oxide spinels as cathodes for secondary
        lithium batteries with nonaq. electrolytes)
    ANSWER 75 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                         2004:938487 CAPLUS
DOCUMENT NUMBER:
                         142:117474
TITLE:
                         Electrochemical characteristics of
                         LiNi0.5-xMn0.5-xCo2xO2 (0 < x \leq 0.1) prepared
                         by spray dry method
AUTHOR(S):
                         Li, De-Cheng; Noguchi, Hideyuki; Yoshio, Masaki
CORPORATE SOURCE:
                         Department of Applied Chemistry, Saga University,
                         Saga, 8408502, Japan
                         Electrochimica Acta (2004), 50(2-3), 427-430
SOURCE:
                         CODEN: ELCAAV; ISSN: 0013-4686
PUBLISHER:
                         Elsevier B.V.
DOCUMENT TYPE:
                         Journal
                         English
LANGUAGE:
REFERENCE COUNT:
                               THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS
                         14
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ST
     electrochem cobalt lithium manganese nickel oxide cathode spray dry;
     lithium secondary battery cathode layered crystal discharge
     capacity stability
    Battery cathodes
TΤ
        (electrochem. characteristics of LiNi0.5-xMn0.5-xCo2xO2 (0 < x \le
        0.1) prepared by spray dry method)
ΙT
    Secondary batteries
        (lithium; electrochem. characteristics of LiNi0.5-xMn0.5-xCo2xO2 (0 < x
        ≤ 0.1) prepared by spray dry method)
IT
     Electric current-potential relationship
        (of battery charging-discharging; electrochem.
        characteristics of LiNi0.5-xMn0.5-xCo2xO2 (0 < x \le 0.1) prepared
        by spray dry method)
IT
     128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
     193215-96-2P, Cobalt lithium manganese nickel oxide
     (Co0.2LiMn0.4Ni0.4O2)
                             390362-01-3P, Cobalt lithium manganese nickel
     oxide (Co0.5LiMn0.25Ni0.2502)
                                     404904-11-6P, Cobalt lithium manganese
     nickel oxide (Co0.4LiMn0.3Ni0.3O2) 405890-05-3P, Cobalt lithium
    manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 459408-76-5P,
    Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.48O2)
     493394-61-9P, Cobalt lithium manganese nickel oxide
     (Co0.3LiMn0.35Ni0.35O2) 697766-76-0P, Cobalt lithium manganese
     nickel oxide (Co0.15LiMn0.42Ni0.42O2)
     RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
        (electrochem. characteristics of LiNi0.5-xMn0.5-xCo2xO2 (0 < x \le
        0.1) prepared by spray dry method)
     ANSWER 76 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
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ACCESSION NUMBER: 2004:935422 CAPLUS

DOCUMENT NUMBER: 141:398204

TITLE: Cathode active materials, their production method, and

nonaqueous electrolyte lithium secondary

batteries

INVENTOR(S): Nakajima, Motoe; Inada, Fumi; Uchikawa, Akio

PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004311427	A2	20041104	JP 2004-86963	20040324
PRIORITY APPLN. INFO.:			JP 2003-82820	A 20030325
TI Cathoda active mate	riale	their produ	ction method and n	onagueous

TI Cathode active materials, their production method, and nonaqueous

electrolyte lithium secondary batteries

AB The disclosed cathode active material is a compound of the formula LiaMnxNiyXzO2 (X = Co, Al; $1 \le a \le 1.2$; $0.2 \le x$ ≤ 0.5 ; $0.35 \le y \le 0.8$; $0 \le z \le 0.45$; x

+ y + z = 1) having lamellar structure, crystallite size (measured by Hall's method) of 400-800 Å, and packing degree, (tap d./theor.

d) X100, of \leq 55%. The lithium secondary battery prepared

with the cathode active materials shows good resistance toward internal resistivity changes.

ST lithium battery cathode active lithium manganate nickelate

IT Battery cathodes

(lithium battery; lithium manganate nickelate derivs. as cathode active substances for)

TT 787635-96-5P, Cobalt lithium manganese nickel oxide (Co0.31Li1.08Mn0.33Ni0.36O2) 787635-97-6P, Cobalt lithium manganese nickel oxide (Co0.3Li1.08Mn0.3Ni0.4O2) 787635-98-7P, Cobalt lithium manganese nickel oxide (Co0.2Li1.08Mn0.3Ni0.5O2) 787635-99-8P 787636-00-4P 787636-01-5P, Aluminum lithium manganese nickel oxide (Al0.1Li1.08Mn0.3Ni0.6O2)

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(lithium secondary battery cathode active substance)

L3 ANSWER 77 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:876924 CAPLUS

DOCUMENT NUMBER: 141:368366

TITLE: Secondary nonaqueous battery

INVENTOR(S): Tajiri, Hiroyuki; Kato, Shiro; Yokouchi, Kae; Yada,

Shizukuni

PATENT ASSIGNEE(S): Osaka Gas Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004296325 PRIORITY APPLN. INFO.:	A2	20041021	JP 2003-88839 JP 2003-88839	20030327 20030327

TI Secondary nonaqueous battery

AB The thin-flat battery, having thickness <12 mm, energy capacity ≥30 Wh, and volumetric energy ≥180 Wh/1, consists of an anode, a cathode, a separator, and a Li salt containing electrolyte solution; where the separator is a nonwoven fabric or a paper, having thickness 20-50 µm and air permeability 20-200 s/100 cc.

ST secondary battery separator nonwoven fabric paper thickness air

permeability IT Secondary batteries (lithium; separators containing nonwoven fabrics or papers with controlled thickness and air permeability for secondary lithium batteries IT Petroleum pitch Secondary battery separators (separators containing nonwoven fabrics or papers with controlled thickness and air permeability for secondary lithium batteries) IT Ravon, uses RL: DEV (Device component use); USES (Uses) (separators containing nonwoven fabrics or papers with controlled thickness and air permeability for secondary lithium batteries) 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate IT 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) RL: DEV (Device component use); USES (Uses) (separators containing nonwoven fabrics or papers with controlled thickness and air permeability for secondary lithium batteries) ANSWER 78 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L32004:876871 CAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 141:368347 Secondary nonaqueous battery TITLE: INVENTOR(S): Tajiri, Hiroyuki; Kuriyama, Kazuya; Yada, Shizukuni PATENT ASSIGNEE(S): Osaka Gas Co., Ltd., Japan Jpn. Kokai Tokkyo Koho, 17 pp. SOURCE: CODEN: JKXXAF DOCUMENT TYPE: Patent LANGUAGE: Japanese FAMILY ACC. NUM. COUNT: 1 PATENT INFORMATION: KIND DATE APPLICATION NO. DATE PATENT NO. _____ A2 20041021 JP 2003-83177 JP 2003-83177 JP 2004296113 20030325 PRIORITY APPLN. INFO.: 20030325 Secondary nonaqueous battery TТ AΒ The thin-flat battery, having thickness <12 mm, energy capacity ≥30 Wh, and volumetric energy ≥180 Wh/l, has a structure, comprising an anode, a cathode, a separator, and a Li salt containing electrolyte solution in a container; where a cathode active mass in the cathode is a Li Mn Ni composite oxide: LiaNibMncMdO2 (a = 1-1.1; $0.3 \le b < 0.5$; $0.3 \le c < 0.5$; $0 < d \le 0.4$; $b \ge c$; b+c+d = 1); and the cathode contains a natural graphite as conductor, having BET spec. surface area ≥100 m2/g. ST secondary battery cathode lithium manganese nickel composite oxide; anode conductor natural graphite secondary lithium battery ΙT Petroleum pitch (anodes containing amorphous C coated graphite particles for secondary lithium batteries) IT Battery anodes (anodes containing natural graphite conductors with controlled spec. surface area for secondary lithium batteries) IT Battery cathodes (cathodes containing lithium nickel manganese composite oxides for secondary lithium batteries) IT Secondary batteries (lithium; secondary lithium batteries containing natural graphite conductors in anodes and lithium nickel manganese oxides in cathodes)

IT

Rayon, uses

RL: DEV (Device component use); USES (Uses)

(secondary lithium batteries containing amorphous C coated

graphite particles in anodes and lithium nickel manganese oxides in

cathodes)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anodes containing amorphous C coated graphite particles for secondary lithium batteries)

IT 346417-97-8, Cobalt lithium manganese nickel oxide

(Co0.33LiMn0.33Ni0.33O2)

RL: DEV (Device component use); USES (Uses)

(cathodes containing lithium nickel manganese composite oxides for secondary lithium batteries)

96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 21324-40-3, Lithium hexafluorophosphate 193215-96-2, Cobalt

lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2)

RL: DEV (Device component use); USES (Uses)

(secondary lithium batteries containing amorphous C coated graphite particles in anodes and lithium nickel manganese oxides in cathodes)

L3 ANSWER 79 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:876870 CAPLUS

DOCUMENT NUMBER: 141:368346

TITLE: Secondary nonagueous battery

INVENTOR(S): Tajiri, Hiroyuki; Kuriyama, Kazuya; Yada, Shizukuni

PATENT ASSIGNEE(S): Osaka Gas Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

TT

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004296110	A2	20041021	JP 2003-83160	20030325
PRIORITY APPLN. INFO.:			JP 2003-83160	20030325

TI Secondary nonaqueous battery

AB The thin-flat battery, having thickness <12 mm, energy capacity ≥30 Wh, and volumetric energy ≥180 Wh/l, has a structure, comprising an anode, a cathode, a separator, and a Li salt containing electrolyte solution in a container; where (1) a cathode active mass in the cathode is a Li Mn Ni composite oxide: LiaNibMncMdO2 (a = 1-1.1; 0.3≤ b< 0.5; 0.3≤ c< 0.5; 0< d≤ 0.4; b≥ c; b+c+d = 1); (2) an anode active mass in the anode is dual-structured graphite particles, having an amorphous C coated on a core part which comprises nature graphite particles; (3) the graphite has d002 ≤0.34 nm, determined by x-ray wide angle diffraction, average particle size 15-40 μm, and tap d. ≥0.8 g/cm3; and the amorphous C has plane distance ≥0.34 nm.

ST secondary battery cathode lithium manganese nickel composite oxide; anode amorphous C coated graphite particle secondary lithium battery

IT Battery anodes

Petroleum pitch

(anodes containing amorphous C coated graphite particles for secondary lithium batteries)

IT Battery cathodes

(cathodes containing lithium nickel manganese composite oxides for secondary lithium batteries)

IT Secondary batteries

(lithium; secondary lithium batteries containing amorphous C coated graphite particles in anodes and lithium nickel manganese oxides in cathodes)

IT Rayon, uses

RL: DEV (Device component use); USES (Uses) (secondary lithium batteries containing amorphous C coated graphite particles in anodes and lithium nickel manganese oxides in

cathodes)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anodes containing amorphous C coated graphite particles for secondary lithium batteries)

IT 193215-96-2, Cobalt lithium manganese nickel oxide

(Co0.2LiMn0.4Ni0.4O2) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)

RL: DEV (Device component use); USES (Uses)

(cathodes containing lithium nickel manganese composite oxides for secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate

21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(secondary lithium batteries containing amorphous C coated graphite particles in anodes and lithium nickel manganese oxides in cathodes)

L3 ANSWER 80 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:876869 CAPLUS

DOCUMENT NUMBER: 141:368345

TITLE: Secondary nonaqueous electrolyte battery

INVENTOR(S): Tajiri, Hiroyuki; Kuriyama, Kazuya; Yada, Shizukuni

PATENT ASSIGNEE(S): Osaka Gas Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

LANGUAGE:

Patent Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004296106	A2	20041021	JP 2003-83127	20030325
PRIORITY APPLN. INFO.:			JP 2003-83127	20030325

TI Secondary nonaqueous electrolyte battery

AB A ≤ 12 mm thick secondary battery, having an energy capacity ≥ 30 W.h and a volume energy d. ≥ 180 W.h/L, uses LiaNibMncMdO2 [M = Co, Al, or Fe; 1 \leq a ≤ 1.1 , 0.3 \leq b ≤ 0.5 , 0.3 \leq c ≤ 0.5 , d ≤ 0.4 , b \geq c, (b+c+d) =1] as cathode active mass; graphite having d002 ≤ 0.34 nm, average particle size 15-40 μ m, and tap d. ≥ 0.8 g/cm3 coated with amorphous carbon having interplanar spacing ≥ 0.34 nm for anode active mass, and an electrolyte solvent containing ethylene carbonate,

MeEtCO3, and 0.1-5% vinylene carbonate.

ST secondary lithium battery electrode electrolyte solvent compn; lithium manganese nickel oxide battery cathode; amorphous carbon coated graphite battery anode; ethylene carbonate ethyl methyl carbonate vinylene carbonate battery electrolyte

IT Battery anodes

(amorphous carbon coated graphite anode active mass for thin secondary lithium batteries)

IT Carbonaceous materials (technological products)

RL: MOA (Modifier or additive use); USES (Uses)

(amorphous carbon coated graphite anode active mass for thin secondary lithium batteries)

IT Battery cathodes

(compns. of substituted lithium manganese nickel oxide cathode active mass for thin secondary lithium batteries)

IT Battery electrolytes

(electrolyte solvent mixts. containing vinylene carbonate for thin secondary lithium batteries)

IT Secondary batteries

(lithium; compns. of electrode active mass and electrolyte solvent mixts. thin secondary lithium batteries)

IT 7782-42-5, Graphite, uses

```
RL: DEV (Device component use); USES (Uses)
        (amorphous carbon coated graphite anode active mass for thin secondary
        lithium batteries)
IT
     193215-96-2, Cobalt lithium manganese nickel oxide
     (Co0.2LiMn0.4Ni0.4O2) 346417-97-8, Cobalt lithium manganese nickel oxide
     (Co0.33LiMn0.33Ni0.33O2)
     RL: DEV (Device component use); USES (Uses)
        (compns. of substituted lithium manganese nickel oxide cathode active
       mass for thin secondary lithium batteries)
ΙT
     96-49-1, Ethylene carbonate
                                623-53-0, Ethyl methyl carbonate
     Vinylene carbonate 21324-40-3, Lithium hexafluorophosphate
     RL: DEV (Device component use); USES (Uses)
        (electrolyte solvent mixts. containing vinylene carbonate for thin
        secondary lithium batteries)
    ANSWER 81 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2004:872897 CAPLUS
DOCUMENT NUMBER:
                        141:352755
TITLE:
                        Cathode active material comprising additive for
                        improving overdischarge-performance of lithium
                        secondary battery
INVENTOR(S):
                        Lee, Jae-hyun; Jang, Min-chul; Ryu, Duk-hyun; Jeong,
                        Jun-yong; Lee, Han-ho; Ahn, Soon-ho
PATENT ASSIGNEE(S):
                        Lq Chem Ltd., S. Korea
                        PCT Int. Appl., 27 pp.
SOURCE:
                        CODEN: PIXXD2
DOCUMENT TYPE:
                        Patent
                        English
LANGUAGE:
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
     PATENT NO.
                        KIND
                              DATE
                                         APPLICATION NO.
                                         -----
                                                                -----
     _____
                        ----
                               20041021 WO 2004-KR786
    WO 2004091016
                        A1
                                                                20040406
        W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
            CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
            GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK,
            LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO,
            NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,
            TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
        RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
            BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,
            ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,
            SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
            TD, TG
    KR 2004088292
                               20041016
                                           KR 2003-22429
                                                                 20030409
    CA 2522107
                        AA
                               20041021
                                           CA 2004-2522107
                                                                 20040406
    EP 1609201
                        Α1
                               20051228
                                          EP 2004-726032
                                                                20040406
            AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR
    JP 2006512747
                     Т2
                               20060413
                                          JP 2005-518275
                                                                 20040406
     BR 2004009759
                        Α
                               20060509
                                           BR 2004-9759
                                                                 20040406
    CN 1771618
                        Α
                               20060510
                                           CN 2004-80009497
                                                                 20040406
PRIORITY APPLN. INFO.:
                                           KR 2003-22429
                                                              A 20030409
                                           WO 2004-KR786
                                                              W 20040406
REFERENCE COUNT:
                              THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
                              RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ΤI
    Cathode active material comprising additive for improving
    overdischarge-performance of lithium secondary battery
ST
     lithium secondary battery cathode additive overdischarge
    performance improvement
TT
    Battery cathodes
        (cathode active material comprising additive for improving
       overdischarge-performance of lithium secondary battery)
ΙT
     Intercalation
```

(electrochem.; cathode active material comprising additive for

improving overdischarge-performance of lithium secondary battery) IT Transition metal oxides RL: DEV (Device component use); USES (Uses) (lithiated; cathode active material comprising additive for improving overdischarge-performance of lithium secondary battery) IT Secondary batteries (lithium; cathode active material comprising additive for improving overdischarge-performance of lithium secondary battery) ΙT Intercalation (retro, electrochem.; cathode active material comprising additive for improving overdischarge-performance of lithium secondary battery) IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl 623-53-0, Ethyl methyl carbonate carbonate 7791-03-9, LiThium perchlorate 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide (CoLiO2) 13824-63-0, Cobalt lithium phosphate colipo4 14283-07-9, Lithium tetrafluoroborate 15365-14-7, Iron lithium phosphate felipo4 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 56525-42-9, Methyl propyl carbonate 61179-01-9, 90076-65-6 Aluminum lithium manganese oxide 162684-16-4, Lithium manganese nickel oxide 188651-66-3, Chromium lithium manganese oxide (Cr0.2Li2Mn1.804) 188651-74-3, Cobalt lithium manganese oxide ((Co,Mn)2LiO4) 188651-75-4, Lithium manganese nickel oxide (Li(Mn, Ni) 204) 204450-96-4, Chromium lithium manganese oxide 214536-41-1, Cobalt lithium manganese oxide 253875-65-9, Cobalt lithium manganese oxide ((Co,Mn)LiO2) 600177-49-9, Lithium manganese nickel oxide (Li(Mn, Ni)O2) 607706-62-7, Cobalt lithium nickel oxide ((Co, Ni)Li2O2) 607706-67-2, Cobalt lithium manganese nickel 607706-68-3, Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO2) oxide ((Co,Mn,Ni)2LiO4) RL: DEV (Device component use); USES (Uses) (cathode active material comprising additive for improving overdischarge-performance of lithium secondary battery) L3 ANSWER 82 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2004:831030 CAPLUS 143:29289 DOCUMENT NUMBER: TITLE: The effect of Si doping on the electrochemical characteristics of LiNixMnyCo(1-x-y)02 AUTHOR(S): Na, Seong-Hwan; Kim, Hyun-Soo; Moon, Seong-In CORPORATE SOURCE: KERI, Changwon, 641-120, S. Korea SOURCE: Solid State Ionics: The Science and Technology of Ions in Motion, Proceedings of the Asian Conference, 9th, Jeju Island, Republic of Korea, June 6-11, 2004 (2004) , 619-627. Editor(s): Chowdari, B. V. R. World Scientific Publishing Co. Pte. Ltd.: Singapore, Singapore. CODEN: 69FXBU; ISBN: 981-238-932-6 DOCUMENT TYPE: Conference LANGUAGE: English REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT IT Battery cathodes Doping (effect of Si doping on electrochem. characteristics of LiNixMnyCo(1-x-y)O2) IT Secondary batteries (lithium; effect of Si doping on electrochem. characteristics of LiNixMnyCo(1-x-y)O2 in relation to)

182442-95-1, Cobalt lithium manganese nickel oxide

RL: CPS (Chemical process); PEP (Physical, engineering or chemical

852832-43-0 852832-44-1 852832-45-2

852832-42-9

IT

process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (effect of Si doping on electrochem. characteristics of
 LiNixMnyCo(1-x-y)O2)

L3 ANSWER 83 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:823603 CAPLUS

DOCUMENT NUMBER: 141:334872

TITLE: Cathode active material for secondary nonaqueous

lithium battery, its manufacture, and the

battery which uses the active mass

INVENTOR(S): Inada, Fumi; Nakajima, Motoe; Uchikawa, Akio

PATENT ASSIGNEE(S): Hitachi Metals, Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2004281253 A2 20041007 JP 2003-71569 20030317

PRIORITY APPLN. INFO.: JP 2003-71569 20030317

TI Cathode active material for secondary nonaqueous lithium battery , its manufacture, and the battery which uses the active mass

AB The active mass is a layer crystal structured Li transition metal composite oxide: LiaMnxNiyMzO2 [M = Co and/or Al; a = 1-1.2; x = 0-0.65; y = 0.35-1; z = 0-0.65; and (x+y+z) = 1]; where the active mass has an initial charge-discharge efficiency ≥70% when using Li as an anode. The active mass is manufactured by wet mixing a Li compound with a transition metal compound; drying the mixture; firing in air, a N atmospheric, or an O atm at 850-1100°; cracking; and heat treating in air, a N atmospheric, or an O atm at 500-800°. The battery has the above cathode active mass.

 ST secondary battery cathode lithium transition metal composite oxide manuf

IT Battery cathodes

(compns. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)

IT Secondary batteries

(lithium; compns. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)

IT 176206-89-6P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.2Ni0.502)
193215-73-5P, Aluminum cobalt lithium manganese nickel oxide
(Al0.1Co0.2LiMn0.3Ni0.402) 193215-96-2P, Cobalt lithium
manganese nickel oxide (Co0.2LiMn0.4Ni0.402) 217309-43-8P, Cobalt
lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402) 769973-31-1P,
Cobalt lithium manganese nickel oxide (Co0.5LiMn0.05Ni0.4502)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP
(Preparation); USES (Uses)

(compns. and manufacture of cathode active mass containing lithium transition metal composite oxides for secondary lithium batteries)

L3 ANSWER 84 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:753539 CAPLUS

DOCUMENT NUMBER: 141:280344

TITLE: Secondary lithium battery

INVENTOR(S):
Kasai, Masahiro; Suzuki, Katsunori

PATENT ASSIGNEE(S): Shin-Kobe Electric Machinery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

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PATENT NO.
                       KIND DATE
                                      APPLICATION NO.
                                                                DATE
                       A2 20040916 JP 2003-47151
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                                                                 -----
     JP 2004259511
                                                                20030225
                                          JP 2003-47151
PRIORITY APPLN. INFO.:
                                                                 20030225
     Secondary lithium battery
ΤI
     The battery uses a cathode active mass containing a layer structured
AB
     oxide containing Li, Co, Ni, and Mn and a spinel type oxide containing Li and Mn;
     where the layer structured oxide is ≥50% of the total cathode
     active mass and the Ni content in the oxide is ≤50mol% of all
     metals other than Li.
     secondary battery cathode active mass oxide mixt compn; layered
ST
     lithium cobalt nickel manganese oxide battery cathode; spinel
     lithium manganese oxide battery cathode
IT
     Battery cathodes
        (mixts. of layered lithium transition metal oxide and spine type
        lithium manganese oxide for secondary lithium battery
        cathodes)
     247565-42-0, Cobalt lithium manganese nickel oxide
IT
     (Co0.2Li1.05Mn0.4Ni0.4O2)
                                757974-77-9, Cobalt lithium manganese nickel
     oxide (Co0.34Li1.02Mn0.33Ni0.33O2) 757974-78-0, Cobalt lithium manganese
     nickel oxide (Co0.5Li1.08Mn0.33Ni0.202) 757974-79-1
                                                           757974-80-4
     757974-81-5, Aluminum lithium manganese oxide (Al0.08Li1.1Mn1.8202)
     RL: DEV (Device component use); USES (Uses)
        (mixts. of layered lithium transition metal oxide and spine type
        lithium manganese oxide for secondary lithium battery
        cathodes)
     ANSWER 85 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                        2004:621425 CAPLUS
DOCUMENT NUMBER:
                        141:382011
                        Structural and electrochemical properties of layered
TITLE:
                        Li[Ni0.5Mn0.5]1-xCoxO2 positive materials synthesized
                        by ultrasonic spray pyrolysis method
                        Oh, Sung Woo; Park, Sang Ho; Park, Chul-Wan; Sun,
AUTHOR(S):
                        Yang-Kook
                        College of Engineering, Center for Information and
CORPORATE SOURCE:
                        Communication Materials, Department of Chemical
                        Engineering, Hanyang University, Seungdong-Gu, Seoul,
                        133-791, S. Korea
SOURCE:
                        Solid State Ionics (2004), 171(3-4), 167-172
                        CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER:
                        Elsevier B.V.
                        Journal
DOCUMENT TYPE:
                        English
LANGUAGE:
REFERENCE COUNT:
                        19
                              THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
                              RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
   cobalt lithium manganese nickel oxide cathode pyrolysis lithium
     battery
IT
     Secondary batteries
        (lithium; properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material
        for lithium batteries synthesized by ultrasonic spray
        pyrolysis)
IT
     Battery cathodes
        (properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material for
        lithium batteries synthesized by ultrasonic spray pyrolysis)
ΙT
     Calcination
        (spray; properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material
        for lithium batteries synthesized by ultrasonic spray
        pyrolysis)
ΙT
     7440-02-0, Nickel, occurrence
     RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
        (in layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material for lithium
        batteries synthesized by ultrasonic spray pyrolysis)
     783372-49-6, Lithium manganese nickel oxide (Lil.08Mn0.48Ni0.502)
ΙT
     783372-50-9, Cobalt lithium manganese nickel oxide
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(Co0.05Li1.07Mn0.46Ni0.4802) 783372-51-0, Cobalt lithium
    manganese nickel oxide (Co0.1Li1.03Mn0.43Ni0.4502) 783372-52-1,
    Cobalt lithium manganese nickel oxide (Co0.15Li1.03Mn0.4Ni0.4202)
    783372-53-2, Cobalt lithium manganese nickel oxide
     (Co0.2Li1.04Mn0.4Ni0.4O2)
                               783372-54-3, Cobalt lithium manganese nickel
    oxide (Co0.34Li1.05Mn0.33Ni0.32O2)
    RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (properties of layered Li[Ni0.5Mn0.5]1~xCoxO2 cathode material for
       lithium batteries synthesized by ultrasonic spray pyrolysis)
    ANSWER 86 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2004:606608 CAPLUS
DOCUMENT NUMBER:
                        141:159839
TITLE:
                        Precursor material for secondary lithium
                        battery cathode material, the cathode
                        material, and their manufacture
INVENTOR(S):
                        Kajiya, Yoshio; Tasaki, Hiroshi
PATENT ASSIGNEE(S):
                        Nikko Materials Co., Ltd., Japan
SOURCE:
                        PCT Int. Appl., 37 pp.
                        CODEN: PIXXD2
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        Japanese
FAMILY ACC. NUM. COUNT:
                        1
PATENT INFORMATION:
    PATENT NO.
                       KIND DATE APPLICATION NO.
                                                                DATE
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    _____
                              _____
                                          _____
                                                                _____
    WO 2004064180
                        A1 20040729 WO 2003-JP16416
                                                               20031222
        W: CN, JP, KR, US
        RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
            IT, LU, MC, NL, PT, RO, SE, SI, SK, TR
                                          EP 2003-782865
    EP 1587156
                        A1
                               20051019
                                                                 20031222
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK
                                          CN 2003-80108519
    CN 1735986
                         A
                               20060215
                                                                 20031222
    US 2006121350
                         A1
                               20060608
                                          US 2005-541817
                                                                20050708
PRIORITY APPLN. INFO.:
                                          JP 2003-1955
                                                             A 20030108
                                          WO 2003-JP16416
                                                            W 20031222
    Precursor material for secondary lithium battery cathode
    material, the cathode material, and their manufacture
    secondary lithium battery cathode material lithium composite
    oxide manuf; battery cathode lithium oxide sodium sulfur
    impurity content control
    Battery cathodes
       (cathodes materials containing Li composite oxides with controlled
       impurities content for secondary lithium batteries)
    Secondary batteries
       (lithium; cathodes materials containing Li composite oxides with controlled
       impurities content for secondary lithium batteries)
    193215-50-8, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.602)
    193215-53-1, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502)
    193215-96-2, Cobalt lithium manganese nickel oxide
    (Co0.2LiMn0.4Ni0.4O2): 346417-97-8, Cobalt lithium manganese nickel
    oxide (Co0.33LiMn0.33Ni0.33O2) 728942-11-8
    RL: DEV (Device component use); USES (Uses)
        (cathodes materials containing Li composite oxides with controlled
       impurities content for secondary lithium batteries)
    7440-23-5, Sodium, miscellaneous 7704-34-9, Sulfur, miscellaneous
    RL: MSC (Miscellaneous)
       (cathodes materials containing Li composite oxides with controlled
       impurities content for secondary lithium batteries)
    ANSWER 87 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:576605 CAPLUS
DOCUMENT NUMBER:
                        141:382002
```

Factors influencing the chemical lithium extraction

L3

TΙ

ST

IT

IT

IT

IT

L3

TITLE:

rate from layered LiNil-y-zCoyMnzO2 cathodes

AUTHOR(S): Venkatraman, S.; Choi, J.; Manthiram, A.

CORPORATE SOURCE: Materials Science and Engineering Program, The

University of Texas at Austin, Austin, TX, 78712, USA SOURCE: Electrochemistry Communications (2004), 6(8), 832-837

CODEN: ECCMF9; ISSN: 1388-2481

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

IT Secondary batteries

(lithium, cathodes; factors influencing lithium extraction rate from layered

LiNi1-y-zCoyMnzO2 cathodes)

IT 12031-65-1D, Lithium nickel oxide (LiNiO2), oxygen-deficient 12190-79-3D, Cobalt lithium oxide (CoLiO2), oxygen-deficient 101920-93-8D, Cobalt lithium nickel oxide (Co0.5LiNi0.502), oxygen-deficient 113066-91-4D, Cobalt lithium nickel oxide (Co0.8LiNi0.202), oxygen-deficient 113066-92-5D, Cobalt lithium nickel oxide (Co0.9LiNi0.102), oxygen-deficient 116327-68-5D, Cobalt lithium 118557-81-6D, Cobalt nickel oxide (Co0.3LiNi0.702), oxygen-deficient lithium nickel oxide (Co0.7LiNi0.302), oxygen-deficient 128975-24-6D, Lithium manganese nickel oxide (Li2MnNiO4), oxygen-deficient 143623-51-2D, Cobalt lithium nickel oxide (Co0.15LiNi0.8502), oxygen-deficient 346417-97-8D, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2), oxygen-deficient 390362-01-3D, Cobalt lithium manganese nickel oxide (Co0.5LiMn0.25Ni0.25O2), oxygen-deficient 405890-05-3D, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2), oxygen-deficient 459408-76-5D, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.4802), oxygen-deficient 697766-76-0D, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.42Ni0.42O2), oxygen-deficient 781672-36-4D, Lithium manganese nickel oxide (LiMn0.25Ni0.7502), oxygen-deficient 781672-38-6D, Cobalt lithium manganese nickel oxide (Co0.58LiMn0.21Ni0.21O2), oxygen-deficient 781672-40-0D, Cobalt lithium manganese nickel oxide (Co0.41LiMn0.29Ni0.29O2), oxygen-deficient RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(factors influencing lithium extraction rate from layered LiNi1-y-zCoyMnzO2 cathodes)

L3 ANSWER 88 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:533748 CAPLUS

DOCUMENT NUMBER: 141:74296

TITLE: Nonaqueous electrolyte rechargeable battery INVENTOR(S): Nagayama, Masatoshi; Yoshizawa, Hiroshi

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE		
				-			
US 2004126661	A1	20040701	US 2003-730049		20031209		
JP 2004207120	A2	20040722	JP 2002-376664		20021226		
PRIORITY APPLN. INFO.:			JP 2002-376664	Α	20021226		

TI Nonaqueous electrolyte rechargeable battery

AB A nonaq. electrolyte rechargeable battery includes: (a) a pos. electrode capable of charging and discharging lithium; (b) a neg. electrode capable of charging and discharging lithium; (c) a separator or a lithium ion conductive layer interposed between the pos. electrode and the neg. electrode; and (d) a lithium ion conductive nonaq. electrolyte, wherein the pos. electrode contains a mixture of a first pos. electrode

active material and a second pos. electrode active material, the first pos. electrode active material includes lithium oxide containing manganese, the lithium oxide further contains aluminum and/or magnesium, and the second pos. electrode active material includes LixCol-y-zMgyAlzO2 where $1 \le x \le 1.03$, $0.005 \le y \le 0.1$ and $0.001 \le z < 0.02$.

ST nonag electrolyte rechargeable battery

IT Battery cathodes Secondary batteries

(nonaq. electrolyte rechargeable battery)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate 61179-01-9, Aluminum lithium manganese oxide 136479-37-3, Lithium magnesium manganese oxide LiMg0.2Mn1.804 142447-12-9, Cobalt 145896-60-2, Aluminum lithium lithiummanganese oxide Co0.95LiMn0.0502 manganese oxide Al0.2LiMn1.804 175786-46-6, Lithium magnesium manganese 184092-89-5, Cobalt lithium titanium oxide Co0.95LiTi0.0502 186298-17-9, Aluminum cobalt lithium manganese nickel oxide 193216-10-3, Aluminum cobalt lithium manganese nickel oxide Al0.1Co0.1LiMn0.4Ni0.402 347175-77-3, Aluminum Lithium magnesium 372491-83-3, Aluminum cobalt lithium magnesium oxide manganese oxide 433969-25-6, Aluminum Cobalt lithium magnesium Al0.01Co0.94LiMq0.0502 478037-17-1, Cobalt lithium magnesium manganese manganese nickel oxide 642999-49-3, Aluminum cobalt lithium magnesium oxide nickel oxide 709654-47-7, Aluminum cobalt lithium oxide 709654-46-6 (Al0.05Co0.9LiO2) 709654-48-8, Cobalt lithium magnesium manganese oxide 709654-49-9, Cobalt lithium magnesium titanium (Co0.94LiMg0.05Mn0.0102) 709654-50-2, Cobalt lithium manganese oxide (Co0.94LiMg0.05Ti0.0102) titanium oxide (Co0.95LiMn0.02Ti0.0202) 709654-51-3, Aluminum cobalt lithium manganese oxide (Al0.02Co0.95LiMn0.02O2) RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte rechargeable battery)

L3 ANSWER 89 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:392766 CAPLUS

DOCUMENT NUMBER: 140:393381

TITLE: Lithium transition metal oxide with gradient of metal

composition for cathode of lithium secondary

batteries

INVENTOR(S): Paulsen, Jens-Martin; Lee, Ki-young; Bae, Joon-sang;

Kim, Mun-ju

PATENT ASSIGNEE(S): Lg Chem, Ltd., S. Korea SOURCE: PCT Int. Appl., 52 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PAT	CENT	NO.			KIN	D	DATE		j	APPL:	ICAT	ION I	10.		D?	ATE		
WO	2004	0406	 77	77 A1			20040513			WO 2003-KR2304					20031030			
	W:	AE,	AG,	AL,	AM,	AT,	AU,	ΑZ,	BA,	BB,	BG,	BR,	BY,	BZ,	CA,	CH,	CN,	
		co,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ,	EC,	EE,	EG,	ES,	FI,	GB,	GD,	GE,	
		GH,	GM,	HR,	HU,	ID,	IL,	IN,	IS,	JP,	KE,	KG,	KP,	KR,	ΚZ,	LC,	LK,	
		LR,	LS,	LT,	LU,	LV,	MA,	MD,	MG,	MK,	MN,	MW,	MX,	MZ,	NI,	NO,	OM,	
		PG,	PH,	PL,	PT,	RO,	RU,	SC,	SD,	SE,	SG,	SK,	SL,	SY,	TJ,	TM,	TN,	
		TR,	TT,	TZ,	UA,	UG,	US,	UZ,	VC,	VN,	YU,	ZA,	ZM,	ZW				
	RW:	BW,	GH,	GM,	KE,	LS,	MW,	MZ,	SD,	SL,	SZ,	TZ,	UG,	ZM,	ZW,	AM,	AZ,	
		BY,	KG,	KZ,	MD,	RU,	ТJ,	TM,	AT,	BE,	BG,	CH,	CY,	CZ,	DE,	DK,	EE,	
		ES,	FI,	FR,	GB,	GR,	HU,	IE,	IT,	LU,	MC,	NL,	PT,	RO,	SE,	SI,	SK,	
		TR,	BF,	ВJ,	CF,	CG,	CI,	CM,	GA,	GN,	GQ,	GW,	ML,	MR,	NE,	SN,	TD,	TG
ΝZ	5204	52			A		2005	0324		NZ 2	002-	5204	52		20	0021	031	
ΑU	2003	2747	84		A1		2004	0525		AU 20	003-	27478	34		20	0031	030	
EΡ	1556	915			A1		2005	0727		EP 20	003-	7590	34		20	0031	030	
	R:	ΑT,	BE,	CH,	DE,	DK,	ES,	FR,	GB,	GR,	ΙT,	LI,	LU,	NL,	SE,	MC,	PT,	
		IE,	SI,	LT,	LV,	FI,	RO,	MK,	CY,	AL,	TR,	BG,	CZ,	EE,	ΗU,	SK		

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CN 1708867
                                20051214
                          Α
                                            CN 2003-80102607
                                                                   20031030
                         T2
     JP 2006503789
                                20060202
                                            JP 2004-548141
                                                                   20031030
     US 2006105239
                         A1
                                20060518
                                            US 2005-533496
                                                                   20050429
PRIORITY APPLN. INFO.:
                                            NZ 2002-520452
                                                                A 20021031
                                            WO 2003-KR2304
                                                               W 20031030
REFERENCE COUNT:
                         3
                               THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     Lithium transition metal oxide with gradient of metal composition for
ΤI
     cathode of lithium secondary batteries
AB
     Disclosed are primary materials, precursor materials and final materials,
     as well as methods to prepare these materials. The final materials are
     mixed lithium transition metal oxides, useful as performance optimized
     cathode materials for rechargeable lithium batteries. The
     transition metal is a solid solution mixture of manganese, nickel and cobalt, M
     = (Mnl-uNiu)l-u-yCoy, with 0.2<u<0.7 and 0.1<y<0.9 where the transition
     metal composition of cobalt, as well of manganese-nickel changes significantly
     from the inner bulk towards the outer bulk. This allows to account for
     different performance requirements of inner bulk, outer bulk and surface.
     The final materials are prepared by solid state reaction from precursor
     materials, which are prepared from primary materials. The primary materials
     can contain addnl. anions or cations. The primary materials are prepared by
     a copptn. reaction, where a hydroxide or carbonate based transition metal
     compound is precipitated onto the surface of seed-particles, the precipitation being
     characterized by a transition metal composition of the precipitate that differs
     significantly from the transition metal composition of the seed-particles.
ST
     battery cathode lithium transition metal oxide
ΙT
     Battery cathodes
     Heat treatment
     Precipitation (chemical)
     Solid state reaction
        (lithium transition metal oxide with gradient of metal composition for
        cathode of lithium secondary batteries)
ΙT
     Transition metal oxides
     RL: DEV (Device component use); USES (Uses)
        (lithium-containing; lithium transition metal oxide with gradient of metal
        composition for cathode of lithium secondary batteries)
IT
     Secondary batteries
        (lithium; lithium transition metal oxide with gradient of metal composition
        for cathode of lithium secondary batteries)
     37348-84-8, Cobalt manganese nickel oxide
IT
     RL: DEV (Device component use); USES (Uses)
        (lithium transition metal oxide with gradient of metal composition for
        cathode of lithium secondary batteries)
IT
     193215-96-2P, Cobalt lithium manganese nickel oxide
     Co0.2LiMn0.4Ni0.4O2 227623-80-5P, Cobalt lithium manganese nickel oxide
     Co0.8LiMn0.1Ni0.102
                           244129-80-4P, Manganese nickel hydroxide
     Mn0.5Ni0.5(OH)2
                      686740-96-5P, Cobalt lithium manganese nickel oxide
     (Co0.67LiMn0.17Ni0.17O2) 686740-97-6P, Cobalt lithium manganese
     nickel oxide (Co0.17LiMn0.42Ni0.42O2)
                                             686740-98-7P, Cobalt manganese
     nickel hydroxide oxide (Co0.17Mn0.42Ni0.42(OH)O)
                                                        686740-99-8P, Cobalt
     manganese nickel hydroxide oxide (Co0.67Mn0.17Ni0.17(OH)O)
     RL: DEV (Device component use); SPN (Synthetic preparation); PREP
     (Preparation); USES (Uses)
        (lithium transition metal oxide with gradient of metal composition for
        cathode of lithium secondary batteries)
ΙT
     14808-79-8, Sulfate, uses 16887-00-6, Chloride, uses
                                                              16984-48-8,
     Fluoride, uses
                     17341-24-1, uses 17341-25-2, Sodium ion, uses
     24203-36-9, Potassium ion, uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (lithium transition metal oxide with gradient of metal composition for
        cathode of lithium secondary batteries)
     ANSWER 90 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2004:392154 CAPLUS
DOCUMENT NUMBER:
                         140:393378
```

Layered cathode materials for lithium ion rechargeable

TITLE:

batteries

INVENTOR(S): Kang, Sun-ho; Amine, Khalil PATENT ASSIGNEE(S): The University of Chicago, USA SOURCE: U.S. Pat. Appl. Publ., 24 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PAT	ENT NO.	KIND	DATE	API	PLICATION NO.		DATE		
US	2004091779	A1	20040513	US	2003-699484		20031031		
US	2005058588	A1	20050317	US	2004-903514		20040730		
PRIORITY	APPLN. INFO.:			US	2002-423347P	P	20021101		
				US	2003-699484	A2	20031031		

TI Layered cathode materials for lithium ion rechargeable batteries

AB A number of materials are disclosed with the composition Lil+xNiαMnβCoγM'δO2-zFz (M' = Mg,Zn,Al,Ga,B,Zr,Ti) for use with rechargeable batteries, wherein x is between about 0 and 0.3, α is between about 0.2 and 0.6, β is between about 0.2 and 0.6, γ is between about 0 and 0.3, δ is between about 0 and 0.15, and z is between about 0 and 0.2. Adding the above metal and fluorine dopants affects capacity, impedance, and stability of the layered oxide structure during electrochem. cycling.

ST layered cathode material lithium rechargeable battery

IT Battery cathodes

Calcination

Heat treatment

Sol-gel processing

Solid state reaction

(layered cathode materials for lithium ion rechargeable batteries)

IT Materials

(layered; layered cathode materials for lithium ion rechargeable batteries)

IT Secondary batteries

(lithium; layered cathode materials for lithium ion rechargeable batteries)

373-02-4, Nickel acetate 546-89-4, Lithium acetate 555-31-7, Aluminum ΙT 1184-55-0, Zinc methoxide 1309-42-8, Magnesium hydroxide isopropoxide 5931-89-5, 1310-65-2, Lithium hydroxide 2180-18-9, Manganese acetate 7779-88-6, Zinc nitrate 7789-24-4, Lithium fluoride, Cobalt acetate 10377-60-3, Magnesium nitrate 12023-99-3, Gallium hydroxide 12672-51-4, Cobalt hydroxide 13473-90-0, 12054-48-7, Nickel hydroxide 13494-90-1, Gallium nitrate 20427-58-1, Zinc Aluminum nitrate hvdroxide 21645-51-2, Aluminum hydroxide, processes 38218-24-5, Indium isopropoxide

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(layered cathode materials for lithium ion rechargeable batteries)

IT 128975-24-6, Lithium manganese nickel oxide LiMn0.5Ni0,502 685867-50-9, Lithium manganese nickel fluoride oxide (Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.501.5-2) 685867-51-0 685867-52-1 685867-54-3 685867-55-4 685867-56-5 685867-57-6 685867-58-7, Lithium manganese nickel fluoride oxide (LiMn0.48Ni0.52F0.0501.95) 685867-60-1, Lithium manganese nickel fluoride oxide

(LiMn0.49Ni0.51F0.0201.98) 685867-61-2, Lithium manganese nickel fluoride oxide (LiMn0.5Ni0.5F0.0101.99) 685867-62-3, Cobalt lithium manganese nickel oxide (Co0.1Li1.2Mn0.55Ni0.1502) 685867-63-4 685867-64-5 685867-66-7 RL: DEV (Device component use); USES (Uses) (layered cathode materials for lithium ion rechargeable batteries) ANSWER 91 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2004:331015 CAPLUS DOCUMENT NUMBER: 140:342184 TITLE: Secondary nonaqueous electrolyte battery INVENTOR(S): Toriyama, Junichi PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan Jpn. Kokai Tokkyo Koho, 10 pp. SOURCE: CODEN: JKXXAF DOCUMENT TYPE: Patent Japanese LANGUAGE: FAMILY ACC. NUM. COUNT: 1 PATENT INFORMATION: KIND DATE APPLICATION NO. DATE PATENT NO. JP 2004127694 A2 20040422 JP 2002-289606 20021002 -----PRIORITY APPLN. INFO.: JP 2002-289606 20021002 Secondary nonaqueous electrolyte battery The battery uses LiNi1-x-yCoxMnyO2 coated LiNi1-zAlxO2 $(0.01 \le z \le 0.1)$ powder as cathode active mass. secondary battery aluminum lithium nickel oxide cathode; lithium cobalt manganese oxide coating battery cathode Battery cathodes (aluminum lithium nickel oxide powder with cobalt lithium manganese nickel oxide coating for secondary lithium battery cathodes) 164175-46-6, Aluminum lithium nickel oxide (Al0.05LiNi0.9502) RL: DEV (Device component use); USES (Uses) (aluminum lithium nickel oxide powder with cobalt lithium manganese nickel oxide coating for secondary lithium battery cathodes) 176206-89-6, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.2Ni0.502) 193215-00-8, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.2Ni0.702) 193215-05-3, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.2Ni0.602) 193215-50-8, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.602) 193215-53-1, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502) 193215-92-8, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.4Ni0.502) 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 217309-43-8, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402) 681160-59-8, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.4Ni0.302) RL: MOA (Modifier or additive use); USES (Uses) (aluminum lithium nickel oxide powder with cobalt lithium manganese nickel oxide coating for secondary lithium battery cathodes) ANSWER 92 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2004:291678 CAPLUS DOCUMENT NUMBER: 140:324162 Cathode active mass containing lithium mixed oxide and secondary nonaqueous-electrolyte battery INVENTOR(S): Sato, Takashi; Yamamoto, Yoshikatsu; Hosoya, Yosuke Sony Corp., Japan Jpn. Kokai Tokkyo Koho, 16 pp. PATENT ASSIGNEE(S):

L3

TITLE:

L3

AΒ

ST

IT

ΙT

IT

SOURCE:

CODEN: JKXXAF

DOCUMENT TYPE:

Patent Japanese

LANGUAGE:

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.

KIND DATE APPLICATION NO.

DATE

JP 2004111076 A2 20040408 JP 2002-268357 20020913 PRIORITY APPLN. INFO.: JP 2002-268357 20020913

TI Cathode active mass containing lithium mixed oxide and secondary nonaqueous-electrolyte battery

AB The cathode active mass contains Li mixed oxides represented as LixNi(l-y-z)CoyMnzAaO2 (A = Fe, V, Cr, Mn, Ti, Mg, Al, B, and/or Ca; x = 0.05-1.10; y + z = 0.10-0.70; z = 0.05-0.40; a = 0-0.1) and having electron conductivity σ 10-4-10-1 S/cm. The battery equipped with the active mass provides high capacity and long cycle life.

ST lithium nickel cobalt manganese mixed oxide cathode secondary battery

IT Battery cathodes

(cathode containing lithium nickel cobalt manganese mixed oxide for secondary nonag.-electrolyte battery)

IT Secondary batteries

(lithium; cathode containing lithium nickel cobalt manganese mixed oxide for secondary nonaq.-electrolyte battery)

IT 677311-85-2, Cobalt lithium manganese nickel oxide (Co0.05Li0.05-1.1Mn0.05Ni0.902) 677311-88-5, Cobalt lithium manganese nickel oxide (Co0.65Li0.05-1.1Mn0.05Ni0.302) 677311-91-0, Cobalt lithium manganese nickel oxide (Co0.05Li0.05-1.1Mn0.4Ni0.5502) 677311-94-3, Cobalt lithium manganese nickel oxide (Co0.3Li0.05-1.1Mn0.4Ni0.302) RL: DEV (Device component use); USES (Uses)

(cathode containing lithium nickel cobalt manganese mixed oxide for secondary nonaq.-electrolyte battery)

L3 ANSWER 93 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:210583 CAPLUS

DOCUMENT NUMBER: 141:26047

TITLE: Effect of Co Content on Rate Performance of LiMn0.5-xCo2xNi0.5-xO2 Cathode Materials for

Lithium-Ion Batteries

AUTHOR(S): Sun, Yucheng; Ouyang, Chuying; Wang, Zhaoxiang; Huang,

Xuejie; Chen, Liquan

CORPORATE SOURCE: Institute of Physics, Nanoscale Physics and Device

Laboratory, Chinese Academy of Sciences, Beijing,

100080, Peop. Rep. China

SOURCE: Journal of the Electrochemical Society (2004), 151(4),

A504-A508

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal LANGUAGE: English

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Effect of Co Content on Rate Performance of LiMn0.5-xCo2xNi0.5-xO2 Cathode Materials for Lithium-Ion Batteries

AB Layer-structured LiMn0.5-xCo2xNi0.5-xO2 was prepared as cathode material for Li-ion batteries. The structure of the layered materials and the oxidation state of the elements in the compds. were characterized by XRD and XPS. Adsorbed O was detected on the surface of material. With an increase of the Co content in LiMn0.5-xCo2xNi0.5-xO2, the oxidation state of Ni, Mn, Co, and O gradually increases while the amount of O adsorbed on the surface of the LiMn0.5-xCo2xNi0.5-xO2 grains decreased. Electrochem. evaluation showed that addition of Co to LiMn0.5-xCo2xNi0.5-xO2 improves its rate performance. The variation of the electronic structure of Ni, Mn, and O may be responsible for the improvement of the rate capability of LiMn0.5-xCo2xNi0.5-xO2 with the addition of Co.

ST cobalt lithium manganese nickel oxide cathode lithium battery

IT Battery cathodes

(effect of Co content on charge-discharge rate of LiMn0.5-xCo2xNi0.5-xO2 cathode material for lithium-ion batteries)

IT Secondary batteries

(lithium; effect of Co content on charge-discharge rate of LiMn0.5-xCo2xNi0.5-xO2 cathode material for lithium-ion

```
batteries)
     128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
ΙT
     193215-96-2, Cobalt lithium manganese nickel oxide
                             390362-01-3, Cobalt lithium manganese nickel oxide
     (Co0.2LiMn0.4Ni0.402)
     (Co0.5LiMn0.25Ni0.25O2)
                                404904-11-6, Cobalt lithium manganese nickel
     oxide (Co0.4LiMn0.3Ni0.3O2) 405890-05-3, Cobalt lithium
     manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2)
                                                       468772-63-6, Cobalt
     lithium manganese nickel oxide (Co0.25LiMn0.38Ni0.3802)
                                                                493394-61-9,
     Cobalt lithium manganese nickel oxide (Co0.3LiMn0.35Ni0.35O2)
     697766-76-0, Cobalt lithium manganese nickel oxide
     (Co0.15LiMn0.42Ni0.42O2)
     RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (effect of Co content on charge-discharge rate of LiMn0.5-xCo2xNi0.5-
        xO2 cathode material for lithium-ion batteries)
IT
     7440-48-4, Cobalt, occurrence
     RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
        (effect of Co content on charge-discharge rate of LiMn0.5-xCo2xNi0.5-
        xO2 cathode material for lithium-ion batteries)
     ANSWER 94 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
                         2004:77097 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         140:131102
TITLE:
                         Secondary nonaqueous electrolyte battery
INVENTOR(S):
                         Tsutsumi, Shuji; Nagura, Kensuke; Takeno, Mitsuhiro;
                         Oura, Takafumi; Okamura, Kazuhiro
PATENT ASSIGNEE(S):
                         Matsushita Electric Industrial Co., Ltd., Japan
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 14 pp.
                         CODEN: JKXXAF
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
     PATENT NO.
                     KIND DATE APPLICATION NO.
                                                                   DATE
                                           -----
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     _____
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                                _____
     JP 2004031091 A2 20040129 JP 2002-184961 20020625
                                            JP 2002-184961
PRIORITY APPLN. INFO.:
                                                                   20020625
     Secondary nonaqueous electrolyte battery
TT
AΒ
     The battery has an anode containing an anode active mass, a cathode
     containing a cathode active mass, and a nonaq. electrolyte solution; where the
     anode active mass is a graphite material or a graphitization resistant
     carbonaceous material; and the cathode active mass is LixNi1-y-zMnyCozO2
     (0 < yr \le 0.5; 0 < z \le 0.5; 0 < yr + z \le 0.75) and satisfies
     (z/x) \le 1 in a charged state.
ST
     secondary lithium battery cathode lithium cobalt nickel
     manganese oxide
ΙT
     Secondary batteries
        (lithium; secondary lithium batteries containing lithium cobalt
        nickel manganese oxides in cathodes for long life)
ΙT
     Battery cathodes
        (secondary lithium batteries containing lithium cobalt nickel
       manganese oxides in cathodes for long life)
    7782-42-5, Graphite, uses 179802-95-0, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.1Ni0.802) 193215-05-3, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.2Ni0.602) 193215-96-2, Cobalt lithium
IT
     manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 217309-43-8, Cobalt lithium
     manganese nickel oxide (Co0.3LiMn0.3Ni0.402)
                                                   244304-31-2, Cobalt lithium
     manganese nickel oxide (Co0.01LiMn0.01Ni0.9802) 390362-01-3, Cobalt
     lithium manganese nickel oxide (Co0.5LiMn0.25Ni0.2502)
                                                               404904-11-6,
     Cobalt lithium manganese nickel oxide (Co0.4LiMn0.3Ni0.302)
     405890-05-3, Cobalt lithium manganese nickel oxide
     (Co0.1LiMn0.45Ni0.45O2)
                               493394-61-9, Cobalt lithium manganese nickel
     oxide (Co0.3LiMn0.35Ni0.35O2) 632287-14-0, Cobalt lithium
     manganese nickel oxide (Co0.02LiMn0.49Ni0.4902)
                                                        632287-15-1, Cobalt
     lithium manganese nickel oxide (Co0.25LiMn0.5Ni0.2502)
     RL: DEV (Device component use); USES (Uses)
```

(secondary lithium batteries containing lithium cobalt nickel manganese oxides in cathodes for long life)

L3 ANSWER 95 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN 2004:13596 CAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 140:273457 TITLE: The synthesis, characterization and electrochemical behavior of the layered LiNi0.4Mn0.4Co0.202 compound AUTHOR(S): Ngala, J. Katana; Chernova, Natasha A.; Ma, Miaomiao; Mamak, Marc; Zavalij, Peter Y.; Whittingham, M. Stanley CORPORATE SOURCE: Department of Chemistry and Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902-6000, USA SOURCE: Journal of Materials Chemistry (2004), 14(2), 214-220 CODEN: JMACEP; ISSN: 0959-9428 PUBLISHER: Royal Society of Chemistry DOCUMENT TYPE: Journal LANGUAGE: English REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT electrochem intercalation layered compd mixed transition metal oxide ST paramagnetism; cobalt lithium manganese nickel oxide battery cathode crystal structure IT Secondary batteries (lithium; synthesis, characterization and electrochem. behavior of layered LiNi0.4Mn0.4Co0.2O2 compound) TΨ Battery cathodes Current density Electric capacitance Intercalation Ion exchange Paramagnetism (synthesis, characterization and electrochem. behavior of layered LiNi0.4Mn0.4Co0.202 compound) IT 674779-54-5P, Cobalt lithium manganese nickel oxide (Co0.2Li0.94Mn0.4Ni0.4O2) 674779-56-7P, Cobalt lithium manganese nickel oxide (Co0.2Li0.5Mn0.4Ni0.4O2) RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (electrochem. delithiated; synthesis, characterization and electrochem. behavior of layered LiNi0.4Mn0.4Co0.202 compound) IT 12031-65-1P, Lithium nickel oxide (LiNiO2) 128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.502) 146956-42-5P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.2Ni0.402) 193215-50-8P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.602) 193215-96-2P , Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 217309-43-8P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402) 404904-11-6P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.3Ni0.302) RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (synthesis, characterization and electrochem. behavior of layered LiNi0.4Mn0.4Co0.2O2 compound) ANSWER 96 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN 2003:971365 CAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 140:29507 TITLE: Lithium cobalt manganese nickel oxide as novel cathode material for secondary batteries INVENTOR(S): Nakura, Kensuke; Oura, Takafumi; Takeno, Mitsuhiro; Tsutsumi, Shuji; Okamura, Kazuhiro PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan SOURCE: U.S. Pat. Appl. Publ., 20 pp. CODEN: USXXCO DOCUMENT TYPE: Patent LANGUAGE: English FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

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PATENT NO.
                                      APPLICATION NO.
                       KIND DATE
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                               20031211 US 2003-447011
20040219 JP 2003-151068
     US 2003228519
                       A1
                                                                20030528
                        A2
     JP 2004055539
     CN 1462085
                               20031217 CN 2003-138407
                        Α
                                                                  20030529
                                           JP 2002-157167 A 20020530
PRIORITY APPLN. INFO.:
TI
     Lithium cobalt manganese nickel oxide as novel cathode material for
     secondary batteries
AΒ
     A nonaq.-electrolyte secondary battery has as a novel cathode
     material cobalt lithium manganese nickel composite oxide of general
     formula LiNi1-yzMnyCozO2, in which y = 0-0.5, z = 0-0.5, and y + z =
     0-0.75. Charging of the battery is carried out at an upper
     voltage limit of 4.25-4.70 V. A suitable battery for this
     cathode material is a graphite anode, an electrolyte of ethylene
     carbonate-Me Et carbonate-LiPF6.
ST
     nonaq electrolyte secondary battery cathode composite oxide;
     lithium cobalt manganese nickel oxide battery cathode
TΤ
     Battery cathodes
        (graphite; lithium cobalt manganese nickel oxide as novel cathode
        material for secondary batteries)
IT
     Battery anodes
        (lithium cobalt manganese nickel oxide as novel cathode material for
        secondary batteries)
ΙT
     7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 72785-69-4
     RL: DEV (Device component use); USES (Uses)
        (anode; lithium cobalt manganese nickel oxide as novel cathode material
        for secondary batteries)
ΙT
     128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
     144973-42-2, Lithium manganese nickel oxide (LiMn0.3Ni0.702)
     149887-20-7, Lithium manganese nickel oxide (LiMn0.1Ni0.902)
     163596-49-4, Lithium manganese nickel oxide (LiMn0.2Ni0.802)
     179186-44-8, Lithium manganese nickel oxide (LiMn0.4Ni0.602)
     179802-95-0, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.1Ni0.802)
     193215-05-3, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.2Ni0.602)
     193215-96-2, Cobalt lithium manganese nickel oxide
     (Co0.2LiMn0.4Ni0.4O2)
                            217309-43-8, Cobalt lithium manganese nickel oxide
     (Co0.3LiMn0.3Ni0.402)
                            244304-31-2, Cobalt lithium manganese nickel oxide
     (Co0.01LiMn0.01Ni0.9802)
                               390362-01-3, Cobalt lithium manganese nickel
     oxide (Co0.5LiMn0.25Ni0.2502)
                                    404904-11-6, Cobalt lithium manganese
    nickel oxide (Co0.4LiMn0.3Ni0.302) 405890-05-3, Cobalt lithium
    manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2)
                                                    493394-61-9, Cobalt
     lithium manganese nickel oxide (Co0.3LiMn0.35Ni0.35O2) 632287-13-9,
    Lithium manganese nickel oxide (LiMn0.01Ni0.9902) 632287-14-0,
    Cobalt lithium manganese nickel oxide (Co0.02LiMn0.49Ni0.49O2)
     632287-15-1, Cobalt lithium manganese nickel oxide (Co0.25LiMn0.5Ni0.25O2)
    RL: DEV (Device component use); USES (Uses)
        (cathode; lithium cobalt manganese nickel oxide as novel cathode
       material for secondary batteries)
ΙT
     96-49-1, Ethylene carbonate
                                 623-53-0, Methyl ethyl carbonate
     21324-40-3, Lithium hexafluorophosphate
    RL: DEV (Device component use); USES (Uses)
        (electrolyte; lithium cobalt manganese nickel oxide as novel cathode
       material for secondary batteries)
L3
    ANSWER 97 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2003:778144 CAPLUS
DOCUMENT NUMBER:
                        139:294648
TITLE:
                        Lithium secondary battery comprising
                        overdischarge-preventing agent
INVENTOR(S):
                        Goh, Eun-Young; Hong, Seung-Tae; Kim, Hyoung-Jin; Lee,
                        Hyung-Keun
PATENT ASSIGNEE(S):
                        LG Chem, Ltd., S. Korea
                        PCT Int. Appl., 25 pp.
SOURCE:
                        CODEN: PIXXD2
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DOCUMENT TYPE:

Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003081697	A1	20031002	WO 2002-KR2267	20021202
W: CN, JP, US RW: DE, FI, FR,	IT, SE	, SI		
KR 2003076153	A	20030926	KR 2002-36438	20020627
CN 1518777	A	20040804	CN 2002-812484	20021202
EP 1490916	A1	20041229	EP 2002-791014	20021202
R: DE, FR, IT,	SE, SI	, FI		
JP 2005521220	Т2	20050714	JP 2003-579299	20021202
US 2004157124	A1	20040812	US 2003-478802	20031125
US 2005118496	A1	20050602	US 2004-950104	20040924
PRIORITY APPLN. INFO.:			KR 2002-15713	A 20020322
			KR 2002-36438	A 20020627
			WO 2002-KR2267	W 20021202
			KR 2003-66865	A 20030926
			KR 2003-66866	A 20030926
			US 2003-478802	A2 20031125
REFERENCE COUNT:	Λ	THERE ARE A	CITED REFERENCES AN	VATIABLE FOR THIS

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

- TI Lithium secondary battery comprising overdischarge-preventing agent
- AB The present invention relates to a lithium secondary battery comprising an overdischarge-preventing agent. Particularly, the present invention provides a lithium secondary battery comprising an overdischarge-preventing agent having superior effects for an overdischarge test and showing 90% or more capacity recovery after the test, by introducing lithium nickel oxide into a cathode for a lithium secondary battery comprising a lithium transition metal oxide capable of occluding and releasing lithium ions as an overdischarge-preventing agent to supply lithium ions such that irreversible capacity of an anode can be compensated or better, thereby lowering voltage of a cathode first to prevent voltage increase of an anode during the overdischarge test.

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- ST lithium secondary battery overdischarge preventing agent
- IT Transition metal oxides
 - RL: MOA (Modifier or additive use); USES (Uses)
 (lithiated; lithium secondary battery comprising
 overdischarge-preventing agent)
- IT Alloys, uses
 - RL: DEV (Device component use); USES (Uses)
 (lithium secondary battery comprising overdischarge preventing agent)
- IT Secondary batteries
 - (lithium; lithium secondary battery comprising overdischarge-preventing agent)
- IT 96-49-1, Ethylene carbonate 105-58-8, 96-48-0, γ -Butyrolactone 108-32-7, Propylene carbonate 616-38-6, Dimethyl Diethyl carbonate 623-53-0, Ethyl methyl carbonate 7439-93-2, Lithium, uses carbonate 7791-03-9, Lithium perchlorate 12031-65-1, 7440-44-0, Carbon, uses Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 13824-63-0, Cobalt lithium phosphate colipo4 14283-07-9, 15365-14-7, Iron lithium phosphate felipo4 Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium 56525-42-9, Methyl 33454-82-9, Lithium triflate hexafluoroarsenate propyl carbonate 90076-65-6 135573-53-4, Cobalt lithium nickel oxide 188651-74-3, Cobalt lithium manganese oxide Co0-1LiNi0-102 188651-75-4, Lithium manganese nickel oxide ((Co,Mn)2LiO4) 253875-65-9, Cobalt lithium manganese oxide ((Co,Mn)LiO2) (Li(Mn, Ni)204) 607706-60-5, 600177-49-9, Lithium manganese nickel oxide (Li(Mn, Ni)O2) Lithium manganese nickel oxide (Li2(Mn,Ni)O2) 607706-61-6, Iron lithium

nickel oxide ((Fe,Ni)Li2O2) 607706-62-7, Cobalt lithium nickel oxide ((Co,Ni)Li2O2) 607706-63-8, Copper lithium nickel oxide ((Cu,Ni)Li2O2) 607706-64-9, Lithium nickel zinc oxide (Li2(Ni,Zn)O2) 607706-65-0, Lithium magnesium nickel oxide (Li2(Mg,Ni)O2) 607706-66-1, Cadmium lithium nickel oxide ((Cd,Ni)Li2O2) 607706-67-2, Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO2) 607706-68-3, Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO2) 607706-68-3, Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO4) RL: DEV (Device component use); USES (Uses) (lithium secondary battery comprising overdischarge-preventing agent)

L3 ANSWER 98 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:757157 CAPLUS

DOCUMENT NUMBER: 139:263346

TITLE: Method for preparing cathode active material for

nonaqueous secondary battery

INVENTOR(S): Nakane, Kenji; Inukai, Hiroshi

PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan

SOURCE: U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 2003180620	A1	20030925	US 2003-394049		20030324
EP 1357616	A1	20031029	EP 2003-5413		20030313
R: AT, BE, CH,	DE, DK	, ES, FR,	GB, GR, IT, LI, LU,	NL,	SE, MC, PT,
IE, SI, LT,	LV, FI	, RO, MK,	CY, AL, TR, BG, CZ,	EE,	HU, SK
JP 2004006267	A2	20040108	JP 2003-77386		20030320
CA 2423051	AA	20030925	CA 2003-2423051		20030321
CN 1447462	A	20031008	CN 2003-107945		20030325
JP 2004152753	A2	20040527	JP 2003-350447		20031009
PRIORITY APPLN. INFO.:			JP 2002-82968	P	20020325
•			JP 2002-297239	P	20021010

- TI Method for preparing cathode active material for nonaqueous secondary battery
- AB There is provided a simple and easy method of preparation of a pos. electrode active material for a nonaq. secondary battery which comprises a compound comprising lithium, nickel and manganese and having a layered structure. The method comprises firing a mixture of (1) at least one member selected from the group consisting of dinickel trioxide and boron compds. and (2) one or more metal compds. comprising lithium, nickel and manganese as their metal elements.
- ST cathode active material prepn nonaq secondary battery
- IT Materials

(layered; method for preparing cathode active material for nonaq. secondary battery)

IT Secondary batteries

(lithium; method for preparing cathode active material for nonaq. secondary battery)

IT Battery cathodes

(method for preparing cathode active material for nonaq. secondary battery)

IT 1310-65-2, Lithium hydroxide (Li(OH)) 1314-06-3, Dinickel trioxide 7439-96-5D, Manganese, compound 7440-02-0D, Nickel, compound 17375-37-0, Manganese carbonate

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(method for preparing cathode active material for nonaq. secondary

battery) IT 96-49-1, Ethylene carbonate 115-07-1, Propylene, uses 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7439-93-2, 21324-40-3, Lithium hexafluorophosphate 128975-24-6, Lithium, uses Lithium manganese nickel oxide LiMn0.5Ni0.502 603961-33-7, Cobalt lithium manganese nickel oxide (Co0.2Li1.04Mn0.42Ni0.34O2) Cobalt lithium manganese nickel oxide (Co0.2Li1.06Mn0.43Ni0.3102) RL: DEV (Device component use); USES (Uses) (method for preparing cathode active material for nonag, secondary ΙT 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (method for preparing cathode active material for nonaq. secondary battery) IT 7439-93-2D, Lithium, compound 7440-42-8D, Boron, compound RL: MOA (Modifier or additive use); USES (Uses) (method for preparing cathode active material for nonag. secondary battery) ANSWER 99 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN 2003:757155 CAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 139:263345 TITLE: Nonaqueous electrolyte secondary battery INVENTOR(S): Fujimoto, Hiroyuki; Fujihara, Toyoki; Kamino, Maruo PATENT ASSIGNEE(S): Japan U.S. Pat. Appl. Publ., 8 pp. SOURCE: CODEN: USXXCO DOCUMENT TYPE: Patent LANGUAGE: English FAMILY ACC. NUM. COUNT: PATENT INFORMATION: APPLICATION NO. PATENT NO. KIND DATE DATE _____ ____ -----______ 20030925 US 2003-390722 20030319 US 2003180617 A1 20031003 JP 2002-79944 JP 2003282048 A2 20020322 JP 3744870 . B2 20060215 CN 2003-107286 20030321 CN 1447465 Α 20031008 PRIORITY APPLN. INFO.: JP 2002-79944 A 20020322 Nonaqueous electrolyte secondary battery AB A nonag. electrolyte secondary battery includes a pos. electrode comprising a pos. electrode material attached to a pos. electrode current collector, a neg. electrode and a nonag. electrolyte, wherein the pos. electrode material comprises a pos. electrode active material represented by LiaMnbNibCol-2bO2 (wherein a is 0≤a≤1.1, and b is $0 < b \le 0.5$), a binder and an elec. conductive agent, wherein the binder is contained in the pos. electrode material in a range of 0.8-3weight%, and the d. of the pos. electrode material is not less than 3.0 g/cm3 STcathode improvement nonaq electrolyte secondary battery IΤ Battery cathodes Secondary batteries (improved cathode for nonaq. electrolyte secondary battery) IΤ Carbon black, uses Fluoropolymers, uses RL: MOA (Modifier or additive use); USES (Uses) (improved cathode for nonaq. electrolyte secondary battery) IT 244129-80-4, Manganese nickel 1310-65-2, Lithium hydroxide hydroxideMn0.5Ni0.5(OH)2 602297-52-9, Cobalt manganese nickel hydroxide 602297-53-0, Cobalt manganese nickel hydroxide (Co0.33Mn0.33Ni0.33(OH)2) (Co0.2Mn0.4Ni0.4(OH)2)

RL: CPS (Chemical process); PEP (Physical, engineering or chemical

(improved cathode for nonaq. electrolyte secondary battery)

process); PROC (Process)

```
IT
     96-49-1, Ethylene carbonate
                                   105-58-8, Diethyl carbonate
                                                                  182442-95-1,
    Cobalt lithium manganese nickel oxide
    RL: DEV (Device component use); USES (Uses)
        (improved cathode for nonaq. electrolyte secondary battery)
IT
     128975-24-6P, Lithium Manganese nickel oxide LiMn0.5Ni0.502
     193215-96-2P, Cobaltlithium manganese nickel oxide
    Co0.2LiMn0.4Ni0.402
                           346417-97-8P, Cobalt lithium manganese nickel oxide
    Co0.33LiMn0.33Ni0.33O2
     RL: DEV (Device component use); SPN (Synthetic preparation); PREP
     (Preparation); USES (Uses)
        (improved cathode for nonag, electrolyte secondary battery)
ΙT
     24937-79-9, Pvdf
     RL: MOA (Modifier or additive use); USES (Uses)
        (improved cathode for nonaq. electrolyte secondary battery)
    ANSWER 100 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2003:727463 CAPLUS
DOCUMENT NUMBER:
                         139:352617
                         Morphology and Safety of Li[NixCol-2xMnx]O2 series
TITLE:
                         (0 \le x \le 1/2)
AUTHOR(S):
                         Jouanneau, S.; MacNeil, D. D.; Lu, Z.; Beattie, S. D.;
                         Murphy, G.; Dahn, J. R.
CORPORATE SOURCE:
                         Department of Chemistry, Dalhousie University,
                         Halifax, NS, B3H3J5, Can.
SOURCE:
                         Journal of the Electrochemical Society (2003),
                         150(10), A1299-A1304
                         CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER:
                         Electrochemical Society
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
REFERENCE COUNT:
                         19
                               THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     cobalt lithium manganese nickel oxide cathode morphol safety
    batterv
     Secondary batteries
IT
        (lithium; morphol. and safety of Li[NixCol-2xMnx]02 cathodes for
        lithium batteries)
IT
     Battery cathodes
     Crystal morphology
     Safety
        (morphol. and safety of Li[NixCol-2xMnx]O2 cathodes for lithium
        batteries)
IT
     12190-79-3, Cobalt lithium oxide (CoLiO2)
                                                 128975-24-6, Lithium manganese
     nickel oxide (LiMn0.5Ni0.502)
                                     214473-76-4, Cobalt lithium manganese
     nickel oxide (Co0.9LiMn0.05Ni0.0502)
                                            390362-01-3, Cobalt lithium
    manganese nickel oxide (Co0.5LiMn0.25Ni0.25O2)
                                                       404904-11-6, Cobalt
     lithium manganese nickel oxide (Co0.4LiMn0.3Ni0.3O2) 405890-05-3
      Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2)
     468772-63-6, Cobalt lithium manganese nickel oxide
     (Co0.25LiMn0.38Ni0.38O2)
                                479624-33-4, Cobalt lithium manganese nickel
     oxide (Co0.98LiMn0.01Ni0.0102)
                                      479624-34-5, Cobalt lithium manganese
     nickel oxide (Co0.95LiMn0.02Ni0.02O2)
                                             479624-35-6, Cobalt lithium
    manganese nickel oxide (Co0.85LiMn0.08Ni0.0802)
                                                        479624-36-7, Cobalt
     lithium manganese nickel oxide (Co0.7LiMn0.15Ni0.15O2)
     RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (morphol. and safety of Li[NixCol-2xMnx]O2 cathodes for lithium
        batteries)
    ANSWER 101 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L.3
                         2003:596491 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         139:136094
TITLE:
                         Lithium containing multiple oxide and secondary
                         nonaqueous battery using the oxide
INVENTOR(S):
                         Uchitomi, Kazutaka; Ueda, Atsushi; Aoyama, Shigeo
                         Hitachi Maxell Ltd., Japan
PATENT ASSIGNEE(S):
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 10 pp.
```

CODEN: JKXXAF

DOCUMENT TYPE:

Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
				-	
JP 2003221236	A2	20030805	JP 2002-338430		20021121
US 2004110063	A1	20040610	US 2003-717772		20031120
PRIORITY APPLN. INFO.:			JP 2001-357729	Α	20011122
			JP 2002-338430	Α	20021121

ΤI Lithium containing multiple oxide and secondary nonaqueous battery using the oxide

AB The oxide is secondary particles of primary Lil+x+αNi(1-x $y+\delta$)/2Mn(1-x-y- δ)/2MyO2 [M = Mg, Ti, Cr, Fe, Cp. Cu. Zm. Al, Ge, and/or Sn; $x \le 0.05 (-0.05) \le 9x + \alpha \le 0.05$, yr ≤ 0.4 , $\delta = (-0.1) - 0.1$ when y ≤ 0.2 or $\delta =$ (-0.24)-0.24 when $0.2 < y \le 0.4$] particles, where the primary particles have average diameter 0.3-3 µm and the secondary particles have average diameter 5-20 µm. A secondary Li battery uses the oxide for its

battery cathode active mass lithium manganese nickel oxide ST particle

IT Battery cathodes

cathode active mass.

(lithium manganese nickel oxide with controlled primary and secondary particle size for battery cathodes)

128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502) TT

346417-97-8, Cobalt lithium manganese nickel oxide

(Co0.33LiMn0.33Ni0.33O2) 532934-40-0, Cobalt lithium manganese

nickel oxide (Co0.16LiMn0.42Ni0.42O2)

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(lithium manganese nickel oxide with controlled primary and secondary particle size for battery cathodes)

ANSWER 102 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3

2003:437424 CAPLUS ACCESSION NUMBER:

139:367347 DOCUMENT NUMBER:

Performance of LiFePO4 as lithium battery TITLE:

cathode and comparison with manganese and vanadium

oxides

Yang, Shoufeng; Song, Yanning; Ngala, Katana; Zavalij, AUTHOR(S):

Peter Y.; Stanley Whittingham, M.

Department of Chemistry and Institute for Materials CORPORATE SOURCE:

Research, State University of New York at Binghamton,

Binghamton, NY, 13902-6000, USA

SOURCE: Journal of Power Sources (2003), 119-121, 239-246

CODEN: JPSODZ; ISSN: 0378-7753

Elsevier Science B.V. PUBLISHER:

DOCUMENT TYPE: Journal English LANGUAGE:

REFERENCE COUNT: THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS 42 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ΤI Performance of LiFePO4 as lithium battery cathode and comparison with manganese and vanadium oxides

ST iron lithium phosphate manganese vanadium oxide cathode battery

IT Secondary batteries

(lithium; performance of cathode materials for lithium batteries)

IT Carbon black, uses

RL: DEV (Device component use); USES (Uses)

(performance of LiFePO4 ground with carbon black as cathode material for lithium batteries)

IT Battery cathodes

(performance of cathode materials for lithium batteries)

IT 15365-14-7, Iron lithium phosphate (FeLiPO4)

```
RL: DEV (Device component use); USES (Uses)
        (performance of LiFePO4 cathode material for lithium batteries
     620972-98-7, Cobalt lithium manganese nickel oxide
IT
     (Co0.2Li0-1Mn0.4Ni0.4O2)
     RL: DEV (Device component use); USES (Uses)
        (performance of LiMn0.4Co0.2Ni0.4O2 cathode material for lithium
        batteries)
IT
     39457-42-6, Lithium manganese oxide
     RL: DEV (Device component use); USES (Uses)
        (performance of LixMnO2 cathode material for lithium batteries
     151331-57-6D, Vanadate (V4O101-), ammonium manganese
ΙT
     RL: DEV (Device component use); USES (Uses)
        (performance of ammonium manganese vanadium oxide cathode material for
        lithium batteries)
IT
     7440-44-0, Carbon, uses
     RL: DEV (Device component use); USES (Uses)
        (performance of carbon gel-coated LiFePO4 cathode material for lithium
        batteries)
ΙT
     56729-39-6, Manganese vanadium oxide
     RL: DEV (Device component use); USES (Uses)
        (performance of vanadium oxide pillared manganese oxide cathode
        material for lithium batteries)
    ANSWER 103 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
                         2003:437407 CAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         139:278921
                         Comparative study of Li(Ni0.5-xMn0.5-xM2x')02 (M' =
TITLE:
                         Mg, Al, Co, Ni, Ti; x = 0, 0.025) cathode materials
                         for rechargeable lithium batteries
AUTHOR(S):
                         Kang, S.-H.; Amine, K.
                         Chemical Technology Division, Electrochemical
CORPORATE SOURCE:
                         Technology Program, Argonne National Laboratory,
                         Argonne, IL, 60439, USA
                         Journal of Power Sources (2003), 119-121, 150-155
SOURCE:
                         CODEN: JPSODZ; ISSN: 0378-7753
                         Elsevier Science B.V.
PUBLISHER:
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
REFERENCE COUNT:
                               THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     Comparative study of Li(Ni0.5-xMn0.5-xM2x')02 (M' = Mg, Al, Co, Ni, Ti; x
ΤI
     = 0, 0.025) cathode materials for rechargeable lithium batteries
     lithium manganese nickel doped layered oxide cathode lithium
ST
     battery
IΤ
     Battery cathodes
        (comparative study of doped lithium manganese nickel oxide cathode
        materials for lithium batteries)
IT
     Secondary batteries
        (lithium; comparative study of doped lithium manganese nickel oxide
        cathode materials for lithium batteries)
     128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
IT
     459408-74-3, Aluminum lithium manganese nickel oxide
                                459408-75-4, Lithium magnesium manganese nickel
     (Al0.05LiMn0.48Ni0.48O2)
     oxide (LiMg0.05Mn0.48Ni0.48O2) 459408-76-5, Cobalt lithium
                                                       459408-78-7, Lithium
     manganese nickel oxide (Co0.05LiMn0.48Ni0.48O2)
     manganese nickel titanium oxide (LiMn0.48Ni0.48Ti0.0502)
                                                                541511-40-4,
     Lithium manganese nickel oxide (LiMn0.48Ni0.5202)
     RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (comparative study of doped lithium manganese nickel oxide cathode
        materials for lithium batteries)
```

ANSWER 104 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

139:9294

2003:418012 CAPLUS

L3

ACCESSION NUMBER:

DOCUMENT NUMBER:

```
TITLE:
                         Cathode active mass, the cathode, secondary lithium
                         battery, and manufacture of the active mass
                         and the battery
INVENTOR(S):
                         Suzuki, Tadashi; Ogawa, Kazuya; Iijima, Tsuyoshi;
                         Maruyama, Satoshi
PATENT ASSIGNEE(S):
                         TDK Corporation, Japan
SOURCE:
                         PCT Int. Appl., 74 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
    PATENT NO.
                       KIND DATE
                                          APPLICATION NO.
                                                                  DATE
    WO 2003044882 A1
                                                                  _____
                               -----
                                          ______
                        A1 20030530 WO 2002-JP12134
                                                                  20021120
        W: CN, JP, US
        RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT,
            LU, MC, NL, PT, SE, SK, TR
    US 2004072072 A1
                                20040519
                                            CN 2002-807021
                                                                   20021120
                                                             20030718
A 20011120
                                            US 2003-466614
                                20040415
PRIORITY APPLN. INFO.:
                                            JP 2001-355253
                                            JP 2002-8684
                                                              A 20020117
                                                              A 20020628
                                            JP 2002-191503
                                            JP 2002-191504
                                                               A 20020628
                                            JP 2002-221287 A 20020730 WO 2002-JP12134 W 20021120
REFERENCE COUNT:
                               THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
    Cathode active mass, the cathode, secondary lithium battery, and
TT
    manufacture of the active mass and the battery
    The active mass is a rock-salt type crystalline structured oxide LiaMnbNicCodOe
AB
     [a = 0.85-1.1; b,c = 0.2-0.6; d = 0.1-0.5; e = 1-2; and (b+c+d) = 1]; and
     is manufactured by preparing a 1st solution by dissolving a Mn containing acid salt,
a Ni
     containing acid salt and a Co containing acid salt in H2O or a H2O based solvent;
    preparing a 2nd solution by mixing the 1st solution with a NH4+ containing solution;
     drying the 2nd solution to obtain a composite salt; and thermal reacting the
     composite salt with LiOH in atmospheric air. The battery has a cathode
     containing the above active mass, an anode, and an electrolyte solution between
     the 2 electrodes; and is prepared by charging an uncharged battery
     to approx. ≥50 % of its full charging capacity; and annealing at a
     temperature ≥60°.
ST
    cathode secondary lithium battery manuf; battery
     cathode lithium manganese nickel cobalt oxide
IT
    Battery cathodes
        (compns. and manufacture of lithium manganese nickel cobalt oxides for
        secondary lithium battery cathodes)
IT
     Secondary batteries
        (lithium; manufacture of secondary lithium batteries using
        annealing treatments and containing lithium manganese nickel cobalt oxide
        cathodes)
     7782-42-5, Graphite, uses
TΤ
     RL: DEV (Device component use); USES (Uses)
        (anode; manufacture of secondary lithium batteries using annealing
        treatments and containing lithium manganese nickel cobalt oxide cathodes)
ΙT
     346417-97-8, Cobalt lithium manganese nickel oxide
     (Co0.33LiMn0.33Ni0.33O2)
    RL: DEV (Device component use); USES (Uses)
        (compns. and manufacture of lithium manganese nickel cobalt oxides for
        secondary lithium battery cathodes)
     193215-51-9, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.3Ni0.5502)
IT
     532934-37-5, Cobalt lithium manganese nickel oxide
    (Co0.17LiMn0.41Ni0.42O2) 532934-38-6, Cobalt lithium manganese nickel oxide (Co0.34LiMn0.33Ni0.33O2) 532934-39-7, Cobalt lithium manganese
     nickel oxide (Co0.35LiMn0.1Ni0.5502) 532934-40-0, Cobalt lithium
```

manganese nickel oxide (Co0.16LiMn0.42Ni0.42O2) RL: DEV (Device component use); USES (Uses) (compns. and manufacture of lithium manganese nickel cobalt oxides for secondary lithium battery cathodes:) IT 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (electrolyte salt; manufacture of secondary lithium batteries using annealing treatments and containing lithium manganese nickel cobalt oxide cathodes) 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate IT 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1120-71-4, 1,3-Propane sultone RL: DEV (Device component use); USES (Uses) (electrolyte solvent; manufacture of secondary lithium batteries using annealing treatments and containing lithium manganese nickel cobalt oxide cathodes) ANSWER 105 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2003:418011 CAPLUS DOCUMENT NUMBER: 139:9293 TITLE: Cathode active mass for secondary lithium battery and the battery INVENTOR(S): Shiozaki, Ryuji; Fujii, Akihiro; Okabe, Kazuya; Nukuda, Toshiyuki Yuasa Corporation, Japan PATENT ASSIGNEE(S): SOURCE: PCT Int. Appl., 57 pp. CODEN: PIXXD2 DOCUMENT TYPE: Patent Japanese LANGUAGE: FAMILY ACC. NUM. COUNT: PATENT INFORMATION: APPLICATION NO. PATENT NO. KIND DATE DATE ______ ____ -----_____ -----20030530 WO 2002-JP12171 20021121 WO 2003044881 A1 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG AU 2002-349424 20030610 20021121 AU 2002349424 A1 EP 1447866 A1 20040818 EP 2002-783588 20021121 AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK 20021121 CN 2002-819315 CN 1723576 Α 20060118 US 2004234857 A1 20041125 US 2004-486080 20040206 A 20011122 PRIORITY APPLN. INFO.: JP 2001-358017 W 20021121 WO 2002-JP12171 REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT Cathode active mass for secondary lithium battery and the ΤI battery The title active mass contains a $\alpha\textsc{-NaFeO2}$ structured composite oxide AΒ LixMnaNibCocO2, where the set of (a, b, c) is located within a square formed by bonding 4 points A (a, b, c) = (0.5, 0.5, 0), B (0.55, 0.45, 0), C(0.55, 0.15, 0.30), and D(0.15, 0.15, 0.7) in a 3-component constitutional diagram to show x/(a + b + c) = 0.95-1.35. The battery has a cathode using the above active mass, an anode using a Li-intercalating material, and an electrolyte solution The battery provides high energy d. and good charge-discharge cycle performance.

secondary battery cathode lithium manganese nickel cobalt oxide

ST

compn IT Battery cathodes (compns. of lithium manganese nickel cobalt oxides in cathodes for secondary lithium batteries) Secondary batteries IT (lithium; compns. of lithium manganese nickel cobalt oxides in cathodes for secondary lithium batteries) ΙT 532933-98-5, Cobalt lithium manganese nickel oxide (Co0.32Li1.1Mn0.36Ni0.32O2) 532933-99-6, Cobalt lithium manganese nickel oxide (Co0.24Li1.3Mn0.52Ni0.24O2) 532934-00-2, Cobalt lithium manganese nickel oxide (Co0.05Li1.1Mn0.52Ni0.4302) 532934-01-3, Cobalt lithium manganese nickel oxide (Co0.35Li1.2Mn0.45Ni0.202) 532934-02-4, Cobalt lithium manganese nickel oxide (Co0.45Li1.1Mn0.35Ni0.202) 532934-03-5, Cobalt lithium manganese nickel oxide (Co0.67LiMn0.16Ni0.16O2) 532934-04-6, Cobalt lithium manganese nickel oxide (Co0.25Li1.1Mn0.5Ni0.2502) RL: DEV (Device component use); USES (Uses) (compns. of lithium manganese nickel cobalt oxides in cathodes for secondary lithium batteries) L3 ANSWER 106 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2003:389051 CAPLUS DOCUMENT NUMBER: 139:182783 TITLE: The syntheses and characterization of layered LiNi1-y-zMnyCozO2 compounds Ngala, J. Katana; Chernova, Natasha A.; Matienzo, AUTHOR(S): Luis; Zavalij, Peter Y.; Whittingham, M. Stanley CORPORATE SOURCE: Chemistry Department and the Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902-6016, USA SOURCE: Materials Research Society Symposium Proceedings (2003), 756(Solid State Ionics--2002), 231-236 CODEN: MRSPDH; ISSN: 0272-9172 PUBLISHER: Materials Research Society DOCUMENT TYPE: Journal LANGUAGE: English REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT ST layered cobalt lithium manganese nickel oxide synthesis; rechargeable battery cathode layered cobalt lithium manganese nickel oxide ΙT Battery cathodes (syntheses and characterization of layered LiNi1-y-zMnyCozO2 compds. for rechargeable battery cathodes) ΙT 146956-42-5P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.2Ni0.402) 193215-50-8P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.602) 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 217309-43-8P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.3Ni0.402) 404904-11-6P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.3Ni0.302) RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (syntheses and characterization of layered LiNi1-y-zMnyCozO2 compds.) ANSWER 107 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3ACCESSION NUMBER: 2003:172065 CAPLUS DOCUMENT NUMBER: 138:224159 TITLE: Laminar lithium nickel manganese composite oxide for lithium batteries. INVENTOR(S): Shima, Koji; Kikuchi, Kazuhiro

INVENTOR(S): Shima, Koji; Kikuchi, Kazuhiro PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

KIND DATE APPLICATION NO. DATE PATENT NO. A2 20030307 JP 2002-163894 20020605 JP 2001-178016 A 20010613 _____ ----JP 2003068306 PRIORITY APPLN. INFO.: Laminar lithium nickel manganese composite oxide for lithium The disclosed composite oxides have Ni/Mn atomic ratio of 0.7-9.0, and AB contain less than 300 ppm Mg and Ca. The part of the Ni and Mn may be substituted with Al, Co, or Fe. The composite materials is especially useful as cathodic material for the Li secondary batteries. lithium nickel manganese oxide secondary battery cathode ST Battery cathodes ΙT (magnesium- and calcium-free lithium manganese nickel oxides for) IT477567-59-2P, Aluminum lithium manganese nickel oxide (AlO.1Li1.05Mn0.45Ni0.45O2) 477567-62-7P, Cobalt lithium manganese nickel oxide (Co0.1Li1.05Mn0.45Ni0.45O2) 479258-19-0P, Lithium manganese nickel oxide (Lil.05Mn0.5Ni0.502) 500912-67-4P, Cobalt lithium manganese nickel oxide (Co0.33Li1.05Mn0.33Ni0.33O2) 500912-68-5P, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.65Ni0.15O2) RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (preparation as cathode active materials for lithium secondary batteries) 7439-95-4, Magnesium, occurrence 7440-70-2, Calcium, occurrence ΙT RL: OCU (Occurrence, unclassified); OCCU (Occurrence) (upper limit in Li-Mn-Ni oxide type battery cathode active materials) ANSWER 108 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 2003:116796 CAPLUS DOCUMENT NUMBER: 138:156280 TITLE: Electrode-active material coated electrode for lithium secondary battery INVENTOR(S): INVENTOR(S): Ishida, Yuko; Okahara, Kenji
PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp. CODEN: JKXXAF DOCUMENT TYPE: Patent LANGUAGE: Japanese FAMILY ACC. NUM. COUNT: 1 PATENT INFORMATION: PATENT NO. KIND DATE

JP 2003045414 A2 20030214 JP 2001-227002 20010727

JP 2001-227002 20010727 KIND DATE APPLICATION NO. DATE PATENT NO. PRIORITY APPLN. INFO.: Electrode-active material coated electrode for lithium secondary The surface of the electrode collector is coated with a layer of electrode AΒ active material having d. of 2-2.7 g/cm3 and containing components A, B, and C, where A is a layer composite oxide of ≥2 of Li and transition metals (Ni, Mn, Co, etc...); B is an elec. conducting agent; and C is a binder. A can be represented by LivNiwMnxCoyQzO2, where 0.8 ≤v ≤ 1.2 , $0 \leq w$, x, and $y \leq 2$, $0 \leq z \leq 0.3$, 0.8 \leq w + x + y + z \leq 1.2, Q = Be, B, Mg, Al, Ca, Sc, Ti, V, Cr, Fe, Cu, Zn, or Ga. Preferably, $0.7 \le w/x \le 9$; and the electrode active material comprises A 10-99, B 0.01-50, and C 0.1-80 weight%. The battery comprises pos. electrode, neg. electrode, and electrolyte. ST electrode active material coating lithium secondary battery; lithium nickel manganese cobalt oxide electrode active material; acetylene black polyvinylidene fluoride electrode active material; ethylene

carbonate diethyl carbonate electrolyte battery; lithium

hexafluorophosphate electrolyte battery

Fluoropolymers, uses

ΙT

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RL: NUU (Other use, unclassified); USES (Uses)
        (binder; for manufacture of electrode-active material coated electrode for
        lithium secondary battery)
     Carbon black, uses
ΙT
     RL: TEM (Technical or engineered material use); USES (Uses)
        (elec. conducting agent, electrode-active material containing; for manufacture
        of electrode-active material coated electrode for lithium secondary
        battery)
IT
     Coating materials
     Collecting apparatus
     Electrodes
        (electrode-active material coated electrode for lithium secondary
        battery)
     Secondary batteries
IT
        (lithium; electrode-active material coated electrode for lithium
        secondary battery)
ΙT
     872-50-4, N-Methylpyrrolidone, uses
     RL: NUU (Other use, unclassified); USES (Uses)
        (additive; for manufacture of electrode-active material coated electrode for
        lithium secondary battery)
     24937-79-9, Polyvinylidene fluoride
IT
     RL: NUU (Other use, unclassified); USES (Uses)
        (binder; for manufacture of electrode-active material coated electrode for
        lithium secondary battery)
ΙT
     405890-05-3P, Cobalt lithium manganese nickel oxide
     (Co0.1LiMn0.45Ni0.4502)
                               496861-40-6P
     RL: PNU (Preparation, unclassified); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (electrode-active material containing; electrode-active material coated
        electrode for lithium secondary battery)
IΤ
     96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3,
     Lithium hexafluorophosphate (LiPF6)
     RL: TEM (Technical or engineered material use); USES (Uses)
        (electrolyte containing; for manufacture of lithium secondary battery)
     1310-66-3, Lithium hydroxide (LiOH) monohydrate 1317-34-6, Manganese
IT
                     12054-48-7, Nickel hydroxide (Ni(OH)2) 21041-93-0,
     oxide (Mn2O3)
     Cobalt hydroxide (Co(OH)2)
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); TEM (Technical or engineered material use); PROC (Process); USES
     (Uses)
        (starting material; for manufacture of electrode-active material coated
        electrode for lithium secondary battery)
    ANSWER 109 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                         2003:97138 CAPLUS
DOCUMENT NUMBER:
                         138:156266
TITLE:
                         Production of lithium nickel manganese compound oxides
                         for secondary lithium battery cathodes by
                         firing their raw material mixtures
INVENTOR(S):
                         Kikuchi, Kazuhiro; Tsurita, Yasushi
                         Mitsubishi Chemical Corp., Japan
PATENT ASSIGNEE(S):
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 10 pp.
                         CODEN: JKXXAF
DOCUMENT TYPE:
                         Patent
                         Japanese
LANGUAGE:
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
                         KIND
                                          APPLICATION NO.
                                                              DATE
     PATENT NO.
                                DATE
     JP 2003034538
                         A2
                                20030207
                                            JP 2002-138827
                                                            20020514
A 20010517
A 20010517
A 20010517
                                                                   20020514
PRIORITY APPLN. INFO.:
                                            JP 2001-147662
                                            JP 2001-147663
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JP 2001-147664 ΤI Production of lithium nickel manganese compound oxides for secondary lithium battery cathodes by firing their raw material mixtures

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lithium nickel manganese oxide manuf battery cathode; slurry
     spraying firing manuf lithium nickel manganese oxide
TΤ
     Transition metal halides
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (manganese halides, slurry component; in production of lithium nickel
        manganese compound oxides for secondary lithium battery
        cathodes by firing of raw material mixts. containing powder obtained by
        spray atomization of slurries)
IT
     Transition metal halides
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (nickel halides, slurry component; in production of lithium nickel
        manganese compound oxides for secondary lithium battery
        cathodes by firing of raw material mixts. containing powder obtained by
        spray atomization of slurries)
TΤ
     Firing (heat treating)
        (production of lithium nickel manganese compound oxides for secondary lithium
        battery cathodes by firing of raw material mixts. containing powder
        obtained by spray atomization of slurries)
IT
     Battery cathodes
        (secondary lithium battery; production of lithium nickel
        manganese compound oxides for secondary lithium battery
        cathodes by firing of raw material mixts. containing powder obtained by
        spray atomization of slurries)
IT
     162684-16-4P, Lithium manganese nickel oxide
     RL: DEV (Device component use); IMF (Industrial manufacture); PREP
     (Preparation); USES (Uses)
        (battery cathodes; production of lithium nickel manganese compound
        oxides for secondary lithium battery cathodes by firing of
        raw material mixts. containing powder obtained by spray atomization of
        slurries)
TΤ
     495464-12-5P
     RL: DEV (Device component use); PNU (Preparation, unclassified); PREP
     (Preparation); USES (Uses)
        (battery cathodes; production of lithium nickel manganese compound
        oxides for secondary lithium battery cathodes by firing of
        raw material mixts. containing powder obtained by spray atomization of
        slurries)
TΤ
     546-89-4, Lithium acetate
                                 554-13-2, Lithium carbonate
                                                               598-62-9,
     Manganese carbonate 1310-65-2, Lithium hydroxide
                                                          1313-13-9, Manganese
     oxide (mno2), processes
                               1313-99-1, Nickel oxide (nio), processes
     1317-34-6, Manganese oxide (mn2o3)
                                        1317-35-7, Manganese oxide (mn3o4)
     3333-67-3, Nickel carbonate (nico3)
                                          7785-87-7, Manganese sulfate
     7786-81-4, Nickel sulfate 7790-69-4, Lithium nitrate
                                                              10377-66-9,
     Manganese nitrate [Mn(NO3)2]
                                    12054-48-7, Nickel hydroxide
     Manganese hydroxide
                           12710-12-2, Manganese oxyhydroxide
     Nickel nitrate
                      55070-72-9, Nickel oxide hydroxide
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (slurry component; in production of lithium nickel manganese compound oxides
        for secondary lithium battery cathodes by firing of raw
        material mixts. containing powder obtained by spray atomization of
        slurries)
L3
    ANSWER 110 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2003:93990 CAPLUS
DOCUMENT NUMBER:
                         138:156241
TITLE:
                         Production of layered lithium nickel manganese
                         compound oxide powder with high bulk density for
                         secondary lithium battery cathodes
INVENTOR(S):
                         Kikuchi, Kazuhiro; Shima, Koji
                         Mitsubishi Chemical Corp., Japan
PATENT ASSIGNEE(S):
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 8 pp.
                         CODEN: JKXXAF
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ST

DOCUMENT TYPE:

Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

KIND DATE APPLICATION NO. PATENT NO. DATE ____ _____ ______ ----------JP 2001-218996 A2 JP 2003034537 20010719 20030207 JP 2001-218996 PRIORITY APPLN. INFO.: 20010719

TI Production of layered lithium nickel manganese compound oxide powder with

high bulk density for secondary lithium battery cathodes

ST lithium nickel manganese oxide powder battery cathode;

compressive shear stress lithium nickel manganese oxide powder

IT Shear stress

(compressive; production of layered lithium nickel manganese compound oxide powder with high bulk d. for secondary lithium battery cathodes by applying compressive shear stress)

IT Battery cathodes

(secondary lithium battery; production of layered lithium nickel manganese compound oxide powder with high bulk d. for secondary lithium battery cathodes by applying compressive shear stress)

IT Compression

(shear stress; production of layered lithium nickel manganese compound oxide powder with high bulk d. for secondary lithium battery cathodes by applying compressive shear stress)

IT 162684-16-4P, Lithium manganese nickel oxide 495464-12-5P

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)

(powder, battery cathodes; production of layered lithium nickel manganese compound oxide powder with high bulk d. for secondary lithium battery cathodes by applying compressive shear stress)

L3 ANSWER 111 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:75510 CAPLUS

DOCUMENT NUMBER: 138:140052

TITLE: Secondary nonaqueous battery

INVENTOR(S): Kuriyama, Kazuya; Okano, Yukiko; Yata, Shizukuni

PATENT ASSIGNEE(S): Kansai Research Institute Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE		
JP 2003031262 PRIORITY APPLN. INFO.:	A2	20030131	JP 2001-209038 JP 2001-209038	20010710 20010710		

TI Secondary nonaqueous battery

AB The battery has a cathode containing LiaMnbNicMdO2 [M = Co, Al and/or Fe; a = 1-1.1; 0.3≤ b< 0.5; 0.3≤ c< 0.5; 0< d≤ 0.3; and (b+c+d) = 1] as active mass; an anode using an active mass, containing a mixture of graphitized mesocarbon microbeads and graphite particles coated with an amorphous C layer; a separator; and a nonaq. electrolyte solution containing a Li salt; where the graphite has interplanar spacing in (002) plane (d002) <0.34 nm and the amorphous C has interplanar spacing ≥0.34 nm in x-ray wide-angle diffraction pattern; and the electrolyte preferably contains a disulfide derivative

ST secondary battery cathode lithium manganese nickel composite oxide compn; carbonaceous anode amorphous carbon coated graphite graphitized mesocarbon mixt

IT Secondary batteries

(structure of secondary lithium batteries containing Li Mn Ni oxide cathodes and carbonaceous anodes)

IT 7440-44-0, MCMB 25-28, uses 462114-58-5, OPCG-K RL: DEV (Device component use); USES (Uses)

(anodes containing graphitized mesocarbon microbeads and amorphous C coated graphite particles with controlled d002 for secondary lithium batteries) ΙT 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 193215-97-3, Cobalt lithium manganese nickel oxide (Co0.25LiMn0.4Ni0.3502) 493394-61-9, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.35Ni0.3502) RL: DEV (Device component use); USES (Uses) (compns. of cathode active mass for secondary lithium batteries TT 5335-87-5, Bis(4-methoxy phenyl)disulfide RL: DEV (Device component use); USES (Uses) (electrolyte solns. containing disulfide derivs. for secondary lithium batteries) ANSWER 112 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3ACCESSION NUMBER: 2003:75480 CAPLUS DOCUMENT NUMBER: 138:140039 Cathode active mass and secondary nonaqueous TITLE: electrolyte battery thereof INVENTOR(S): Okabe, Kazuya; Shiosaki, Ryuji; Yufu, Hiroshi Yuasa Corporation, Japan PATENT ASSIGNEE(S): SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp. CODEN: JKXXAF DOCUMENT TYPE: Patent Japanese LANGUAGE: FAMILY ACC. NUM. COUNT: 1 PATENT INFORMATION: KIND DATE PATENT NO. APPLICATION NO. DATE ------------------------JP 2003031219 A2 20030131 JP 2001-213298 20010713 RITY APPLN. INFO.: JP 2001-213298 20010713 PRIORITY APPLN. INFO.: Cathode active mass and secondary nonaqueous electrolyte battery thereof ST secondary battery cathode lithium composite oxide compn IT Battery cathodes (compns. of cathode active mass containing Li composite oxides for secondary lithium batteries) ΙT 193215-92-8, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.4Ni0.502) 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 317831-74-6, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.5Ni0.402) 404904-11-6, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.3Ni0.3O2) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 405890-05-3 , Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 459408-91-4 459408-93-6 459408-94-7 459408-95-8 459408-97-0 493326-93-5, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.34Ni0.33O2) RL: DEV (Device component use); USES (Uses) (compns. of cathode active mass containing Li composite oxides for secondary lithium batteries) ANSWER 113 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3ACCESSION NUMBER: 2003:56649 CAPLUS DOCUMENT NUMBER: 138:124974 TITLE: Secondary nonaqueous battery equipped with lithium manganese nickel mixed oxide cathode and aromatic hydrocarbon anode and its manufacture INVENTOR(S): Kuriyama, Kazuya; Okano, Yukiko; Yata, Shizukuni PATENT ASSIGNEE(S): Kansai Research Institute Inc., Japan

Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

Patent

LANGUAGE: Japanese FAMILY ACC. NUM. COUNT: 1

SOURCE:

DOCUMENT TYPE:

PATE	NT INFORMATION:				
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PRIC TI	RITY APPLN. INFO.: Secondary nonaqueou		ry equipped	JP 2001-206832 JP 2001-206832 with lithium manganes ic hydrocarbon anode a	20010706 e
AB	The title battery LiaMnbNicMdO2 (M = ≤ c < 0.5; 0 < d ≤ polycyclic aromatic raw material and sarea ≤50 m2/g. The charging at 40-80° and long cycle life	Co, Al, 0.3; b c hydrocatisfying claimed. The best	and/or Fe; + c + d = 1; arbon obtain g H/C atomic d process is attery provi	$a = 1-1.1; 0.3 \le b < 0$ and an anode contain ned by thermal reactions ratio 0.35-0.05 and so characterized by initides high capacity	ing a n of a pitch-based BET sp. surface
ST	polycyclic arom hyd	drocarbo		e secondary battery; nium battery	
IT	(Preparation); USES (aromatic hydro	mponent S (Uses) carbons; ithium m	manufacture	Preparation, unclassif e of secondary nonaq. ckel mixed oxide catho	battery
IT	Secondary batteries (lithium; manufa	s acture c		nonaq. battery equipp de cathode and aromati	
ΙΤ	Battery anodes Battery cathodes (manufacture of manganese nicke	seconda l mixed	ry nonaq. ba	attery equipped with l de and aromatic hydroc	ithium arbon anode)
ΙΤ	Aromatic hydrocarbo RL: DEV (Device con (Preparation); USE: (polycyclic; man lithium mangane: anode)	ons, use mponent S (Uses) nufactur	s use); PNU () e of seconda	Preparation, unclassifary nonaq. battery equide cathode and aromati	ied); PREP
IT		ithium m		cure of secondary nona ckel mixed oxide catho	
IT	193215-96-2, Cobal (Co0.2LiMn0.4Ni0.40 RL: DEV (Device con (manufacture of	t lithiu D2) mponent seconda	use); USES ry nonaq. ba		
	ANSWER 114 OF 133 SSION NUMBER: MENT NUMBER: E:	2002:9 138:15 Layer	00566 CAPLU 237 structured : y cathode, a	2006 ACS on STN JS Lithium nickel mangane and secondary lithium	se oxide,
	NTOR(S): NT ASSIGNEE(S): CE:	Kikuch Mitsub Jpn. k	i, Kazuhiro ishi Chemica	al Corp., Japan Koho, 11 pp.	
LANG FAMI	MENT TYPE: UAGE: LY ACC. NUM. COUNT: NT INFORMATION:	Patent Japane 1			

PATENT NO. KIND DATE APPLICATION NO. DATE PATENT NO.

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JP 2002338250
                          A2
                                 20021127
                                             JP 2001-147665
                                                                    20010517
PRIORITY APPLN. INFO.:
                                             JP 2001-147665
                                                                    20010517
     Layer structured lithium nickel manganese oxide, battery
     cathode, and secondary lithium battery
     The oxide has a Ni/Mn mol ratio 0.7-9 and has part of Ni and Mn replaced
AΒ
     by other elements M, and when M = Al the Ni/Mn mol ratio is 0.8-1.2. The
     oxide is preferably LixNiyMnzM1-y-zO2, where M = al, Co, Fe, Mg, and/or
     Ca; 0 < x \le 1.2, 0.7 \le (y/z) \le 9 [0.8 \le (y/z)]
     \leq 1.2 when M = Al], and 0 < (1-y-z) \leq 0.5. A secondary Li
     battery uses the oxide for cathode.
ST
     secondary battery cathode lithium manganese nickel oxide; layer
     structured lithium manganese nickel oxide cathode
IT
     Battery cathodes
        (compns. of layer structured substituted lithium manganese nickel
        oxides for cathodes in secondary lithium batteries)
ΙT
     477567-59-2, Aluminum lithium manganese nickel oxide
     (Al0.1Li1.05Mn0.45Ni0.45O2) 477567-62-7, Cobalt lithium
     manganese nickel oxide (Co0.1Li1.05Mn0.45Ni0.45O2)
     RL: DEV (Device component use); USES (Uses)
        (compns. of layer structured substituted lithium manganese nickel
        oxides for cathodes in secondary lithium batteries)
     ANSWER 115 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                         2002:833142 CAPLUS
DOCUMENT NUMBER:
                         137:339998
TITLE:
                         Cathode active mass, its manufacture, the cathode, and
                         secondary nonaqueous battery
INVENTOR(S):
                         Shiozaki, Ryuji; Okabe, Kazuya; Nukuda, Toshiyuki;
                         Fujii, Akihiro; Inamasu, Tokuo; Iguchi, Takaaki;
                         Kojima, Toshiaki; Watari, Takashi; Yufu, Hiroshi
PATENT ASSIGNEE(S):
                         Yuasa Corporation, Japan
SOURCE:
                         PCT Int. Appl., 175 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
     PATENT NO.
                         KIND
                                DATE
                                           APPLICATION NO.
                                                                   DATE
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                                            _____
                                                                    -----
                               20021031 WO 2002-JP3862
     WO 2002086993
                         A1
                                                                    20020418
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU,
             TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
             CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
             BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     EP 1391950
                          A1
                                20040225
                                            EP 2002-722703
                                                                    20020418
         R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
     TW 541745
                          В
                                20030711
                                             TW 2002-91108148
                                                                    20020419
PRIORITY APPLN. INFO.:
                                             JP 2001-121901
                                                                 A 20010420
                                             JP 2001-124842
                                                                 A 20010423
                                             JP 2001-237084
                                                                 A 20010803
                                             JP 2001-249578
                                                                 A 20010820
                                                                 Α
                                             JP 2001-288831
                                                                    20010921
                                             JP 2001-307173
                                                                 Α
                                                                    20011003
                                             JP 2001-354436
                                                                 Α
                                                                    20011120
                                             WO 2002-JP3862
                                                                 W
                                                                    20020418
REFERENCE COUNT:
                         13
                               THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     Cathode active mass, its manufacture, the cathode, and secondary
```

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The cathode active mass is LiaMn0.5-xNi0.5-yMx+yO2, where 0 <a ,1.3,
     (-0.1) \le (x-y) \le 0.1, and M = elements other than Li, Mn, and
          Preferably, the active mass has pore volume 0.001-0.006 mL/g or sp.
     surface area 0.3-1.6 \text{ m}2/\text{g} and has I44/I18 = 0.65-1.05, where I18 and I44
     are the intensities of peaks at 2\theta = 18.6\pm1 and 44.1\pm1^{\circ}
     on its powder x ray diffraction pattern. The manufacture of the active mass
     includes steps of continuously supplying sep. aqueous solns. of Mn, Ni, and M
     salts, a complexing agent, and a reducing agent or a mixture of ≥2 of
     the above components to a reaction tank; and continuously supplying an aqueous
     alkali solution to the tank to form a coppt. of Ni, Mn, and M. The
     battery has a cathode using the active mass.
ST
     secondary battery cathode lithium nickel manganese oxide manuf;
     diffraction pattern lithium nickel manganese oxide battery
     cathode; porosity lithium nickel manganese oxide battery
     cathode; surface area lithium nickel manganese oxide battery
     cathode
TT
     Battery cathodes
        (compns. and properties and manufacture of substituted lithium manganese
        nickel oxides for secondary lithium battery cathodes)
     193215-00-8P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.2Ni0.702)
IT
     346417-97-8P, Cobalt lithium manganese nickel oxide
     (Co0.33LiMn0.33Ni0.33O2) 405890-05-3P, Cobalt lithium manganese
     nickel oxide (Co0.1LiMn0.45Ni0.4502)
                                            474265-95-7P, Lithium manganese
     nickel oxide (Li1.02Mn0.5Ni0.502)
                                         474265-96-8P, Lithium manganese nickel
     oxide (Li1.02Mn0.6Ni0.402)
                                  474265-97-9P, Lithium manganese nickel oxide
     (Lil.02Mn0.4Ni0.602) 474265-98-0P, Cobalt lithium manganese
     nickel oxide (Co0.17Li1.02Mn0.42Ni0.42O2)
                                                  474266-00-7P, Cobalt lithium
     manganese nickel oxide (Co0.25Li1.02Mn0.38Ni0.38O2)
                                                            474266-01-8P, Cobalt
     lithium manganese nickel oxide (Co0.33Li1.02Mn0.33Ni0.33O2)
     474266-02-9P, Cobalt lithium manganese nickel oxide
     (Co0.08Li1.02Mn0.48Ni0.48O2) 474266-03-0P, Cobalt lithium
     manganese nickel oxide (Co0.1Li1.02Mn0.45Ni0.45O2)
                                                           474266-04-1P, Cobalt
     lithium manganese nickel oxide (Co0.4Li1.02Mn0.3Ni0.3O2)
     474266-05-2P, Cobalt lithium manganese nickel oxide
     (Co0.1Li1.02Mn0.4Ni0.502)
                                 474266-06-3P, Cobalt lithium manganese nickel
     oxide (Co0.4Li1.01Mn0.25Ni0.35O2) 474266-07-4P, Cobalt lithium
     manganese nickel oxide (Co0.06Li0.99Mn0.5Ni0.4402)
                                                           474266-08-5P, Cobalt
     lithium manganese nickel oxide (Co0.6Li1.01Mn0.2Ni0.2O2)
                                                                 474266-09-6P,
     Lithium magnesium manganese nickel oxide (LiMg0.01Mn0.5Ni0.502)
     474266-10-9P, Lithium magnesium manganese nickel oxide
     (LiMg0.01Mn0.59Ni0.402)
                               474266-11-0P, Lithium magnesium manganese nickel
     oxide (LiMg0.01Mn0.4Ni0.5902)
                                     474266-12-1P, Aluminum lithium manganese
     nickel oxide (Al0.01LiMn0.5Ni0.502)
                                           474266-13-2P, Aluminum lithium
     manganese nickel oxide (Al0.01LiMn0.59Ni0.402)
                                                       474266-14-3P, Aluminum
     lithium manganese nickel oxide (Al0.01LiMn0.4Ni0.5902)
     RL: DEV (Device component use); IMF (Industrial manufacture); PRP
     (Properties); PREP (Preparation); USES (Uses)
        (compns. and properties and manufacture of substituted lithium manganese
        nickel oxides for secondary lithium battery cathodes)
     ANSWER 116 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2002:784062 CAPLUS
DOCUMENT NUMBER:
                         138:273957
TITLE:
                         Layered Li(Ni0.5-xMn0.5-xM'2x)O2 (M' = Co, Al, Ti; x =
                         0, 0.025) cathode materials for Li-ion rechargeable
                         batteries
AUTHOR(S):
                         Kang, S.-H.; Kim, J.; Stoll, M. E.; Abraham, D.; Sun,
                         Y. K.; Amine, K.
CORPORATE SOURCE:
                         Chemical Technology Division, Electrochemical
                         Technology Program, Argonne National Laboratory,
                         Argonne, IL, 60439, USA
SOURCE:
                         Journal of Power Sources (2002), 112(1), 41-48
                         CODEN: JPSODZ; ISSN: 0378-7753
                         Elsevier Science B.V.
PUBLISHER:
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nonaqueous battery

AB

DOCUMENT TYPE:

Journal

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LANGUAGE:
                         English
REFERENCE COUNT:
                         25
                               THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
     Layered Li(Ni0.5-xMn0.5-xM'2x)O2 (M' = Co, Al, Ti; x = 0, 0.025) cathode
ΤI
     materials for Li-ion rechargeable batteries
ST
     lithium manganese nickel oxide layered cathode battery; aluminum
     lithium manganese nickel oxide layered cathode battery; cobalt
     lithium manganese nickel oxide layered cathode battery; titanium
     lithium manganese nickel oxide layered cathode battery
IT
     Battery cathodes
     Secondary batteries
        (layered lithium manganese nickel oxide-based cathode materials for
        lithium-ion batteries)
IT
     459408-74-3, Aluminum lithium manganese nickel oxide
     (Al0.05LiMn0.48Ni0.4802)
                                459408-78-7, Lithium manganese nickel titanium
     oxide (LiMn0.48Ni0.48Ti0.0502)
     RL: DEV (Device component use); USES (Uses)
        (layered aluminum lithium manganese nickel oxide cathode materials for
        lithium-ion batteries)
ΙT
     459408-76-5, Cobalt lithium manganese nickel oxide
     (Co0.05LiMn0.48Ni0.4802)
     RL: DEV (Device component use); USES (Uses)
        (layered cobalt lithium manganese nickel oxide cathode materials for
        lithium-ion batteries)
IT
     128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
     RL: DEV (Device component use); USES (Uses)
        (layered lithium manganese nickel oxide cathode materials for
        lithium-ion batteries)
    ANSWER 117 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2002:719559 CAPLUS
DOCUMENT NUMBER:
                         138:58832
                         Structure and Electrochemistry of Li[NixCol-2xMnx]O2
TITLE:
                         (0 \le x \le 1/2)
AUTHOR(S):
                         MacNeil, D. D.; Lu, Z.; Dahn, J. R.
CORPORATE SOURCE:
                         Dep. Chem., Dalhousie Univ., Halifax, NS, B3H3J5, Can.
SOURCE:
                         Journal of the Electrochemical Society (2002),
                         149(10), A1332-A1336
                         CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER:
                         Electrochemical Society
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
REFERENCE COUNT:
                         19
                               THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ST
     battery cobalt lithium manganese nickel oxide cathode structure
     electrochem
IT
     Secondary batteries
        (lithium; structure and electrochem. of Li[NixCol-2xMnx]O2 cathode for
        batteries)
ΙT
     Battery cathodes
        (structure and electrochem. of Li[NixCol-2xMnx]O2 cathode for
        batteries)
IT
     12190-79-3, Cobalt lithium oxide (CoLiO2)
                                                128975-24-6, Lithium manganese
     nickel oxide (LiMn0.5Ni0.502)
                                     214473-76-4, Cobalt lithium manganese
     nickel oxide (Co0.9LiMn0.05Ni0.0502)
                                            404904-11-6, Cobalt lithium
    manganese nickel oxide (Co0.4LiMn0.3Ni0.302) 405890-05-3, Cobalt
     lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2)
                                                               468772-63-6,
     Cobalt lithium manganese nickel oxide (Co0.25LiMn0.38Ni0.38O2)
     479624-33-4, Cobalt lithium manganese nickel oxide
                                479624-34-5, Cobalt lithium manganese nickel
     (Co0.98LiMn0.01Ni0.0102)
     oxide (Co0.95LiMn0.02Ni0.02O2)
                                      479624-35-6, Cobalt lithium manganese
     nickel oxide (Co0.85LiMn0.08Ni0.0802)
                                             479624-36-7, Cobalt lithium
     manganese nickel oxide (Co0.7LiMn0.15Ni0.15O2)
                                                      479624-38-9, Cobalt
     lithium manganese nickel oxide (Co0.55LiMn0.22Ni0.22O2)
     RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (structure and electrochem. of Li[NixCol-2xMnx]02 cathode for
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L3
     ANSWER 118 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER:
                         2002:716671 CAPLUS
 DOCUMENT NUMBER:
                         137:235265
 TITLE:
                         Cathode active mass and secondary nonaqueous
                         electrolyte battery thereof
 INVENTOR(S):
                         Okabe, Kazuya; Shiozaki, Ryuji; Fujii, Akihiro; Ito,
                         Akinori; Yufu, Hiroshi
 PATENT ASSIGNEE(S):
                         Yuasa Corporation, Japan
                         PCT Int. Appl., 87 pp.
 SOURCE:
                         CODEN: PIXXD2
 DOCUMENT TYPE:
                         Patent
 LANGUAGE:
                         Japanese
 FAMILY ACC. NUM. COUNT:
 PATENT INFORMATION:
                                DATE
     PATENT NO.
                         KIND
                                          APPLICATION NO.
                                                                 DATE
                                           ______
                                                                 -----
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                                -----
     WO 2002073718
                                20020919 WO 2002-JP2284
                         A1
                                                                 20020312
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU,
             TJ, TM
          RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
             CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
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     EP 1372202
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                               20031217
                                           EP 2002-703970
                                                                   20020312
             AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
                                            TW 2002-91104740
     TW 560098
                          В
                                20031101
                                                                   20020313
 PRIORITY APPLN. INFO.:
                                            JP 2001-71486
                                                              A 20010314
                                            JP 2001-80430
                                                              A 20010321
                                            JP 2001-80434
                                                               A 20010321
                                            WO 2002-JP2284
                                                               W 20020312
                         7
REFERENCE COUNT:
                               THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
ΤI
     Cathode active mass and secondary nonaqueous electrolyte battery
AB
     The Li Mn Ni oxide based cathode active mass has a BET surface 0.3-1.5
     m2/q. Preferably, the oxide is LiMn0.5Ni0.502, where part of Mn and Ni
     may be replaced by Li, B, Mg, Al, Ti, V, Cr, Fe, Co, Cu, and/or Zn; and
     has a layered structure with specified peaks on its CuK\alpha powder x
     ray diffraction pattern. The battery is a secondary Li
     secondary battery cathode lithium manganese nickel oxide compn;
 ST
     BET surface cathode lithium manganese nickel oxide compn
IT
     Battery cathodes
         (compns. and BET surface and x ray diffraction patterns of lithium
        manganese nickel oxide based cathode active mass for secondary lithium
        batteries)
 IT
     128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502)
     193215-96-2, Cobalt lithium manganese nickel oxide
      (Co0.2LiMn0.4Ni0.4O2) 405890-05-3, Cobalt lithium manganese
     nickel oxide (Co0.1LiMn0.45Ni0.4502)
                                            459408-72-1, Lithium manganese
     nickel borate oxide (LiMn0.48Ni0.48(BO3)0.0501.85) 459408-73-2, Lithium
     manganese nickel vanadium oxide (LiMn0.48Ni0.48V0.0502)
                                                               459408-74-3,
     Aluminum lithium manganese nickel oxide (Al0.05LiMn0.48Ni0.48O2)
     459408-75-4, Lithium magnesium manganese nickel oxide
      (LiMg0.05Mn0.48Ni0.48O2) 459408-76-5, Cobalt lithium manganese
                                           459408-77-6, Chromium lithium
     nickel oxide (Co0.05LiMn0.48Ni0.48O2)
     manganese nickel oxide (Cr0.05LiMn0.48Ni0.48O2) 459408-78-7, Lithium
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manganese nickel titanium oxide (LiMn0.48Ni0.48Ti0.0502) 459408-79-8,

A

Iron lithium manganese nickel oxide (Fe0.05LiMn0.48Ni0.48O2) 459408-80-1, Copper lithium manganese nickel oxide (Cu0.05LiMn0.48Ni0.4802) 459408-81-2, Lithium manganese nickel zinc oxide (LiMn0.48Ni0.48Zn0.0502) 459408-82-3, Lithium manganese nickel vanadium oxide (LiMn0.48Ni0.47V0.0502) 459408-83-4, Aluminum lithium manganese nickel oxide (Al0.05LiMn0.48Ni0.4702) 459408-84-5, Lithium magnesium manganese nickel oxide (LiMg0.05Mn0.48Ni0.47O2) 459408-85-6, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.48Ni0.4702) 459408-86-7, Chromium lithium manganese nickel oxide (Cr0.05LiMn0.48Ni0.4702) 459408-87-8, Lithium manganese nickel titanium oxide (LiMn0.48Ni0.47Ti0.0502) 459408-88-9, Iron lithium manganese nickel oxide (Fe0.05LiMn0.48Ni0.4702) 459408-89-0, Copper lithium manganese nickel oxide (Cu0.05LiMn0.48Ni0.4702) 459408-90-3, Lithium manganese nickel zinc oxide (LiMn0.48Ni0.47Zn0.0502) 459408-91-4 459408-92-5 459408-93-6 459408-94-7 459408-95-8 459408-96-9 459408-97-0 459408-98-1 459408-99-2 RL: DEV (Device component use); PRP (Properties); USES (Uses) (compns. and BET surface and x ray diffraction patterns of lithium manganese nickel oxide based cathode active mass for secondary lithium batteries)

L3 ANSWER 119 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:391648 CAPLUS

DOCUMENT NUMBER: 136:388525

TITLE: Lithium containing multiple oxide, secondary

nonaqueous battery using the oxide, and

manufacture of the oxide

INVENTOR(S): Ueda, Atsushi; Uchitomi, Kazutaka; Aoyama, Shigeo

PATENT ASSIGNEE(S): Hitachi Maxell, Ltd., Japan

SOURCE: PCT Int. Appl., 46 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. KIND					DATE			APPLICATION NO.					DATE				
WC	2002	0404	04				2002	0523							2	0011	114
	₩:	ΑE,	AG,	AL,	AM,	AT,	AU,	AZ,	BA,	BB	BG,	BR,	BY,	BZ,	CA,	CH,	CN,
		co,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ,	EC	, EE,	ES,	FI,	GB,	GD,	GE,	GH,
		GM,	HR,	HU,	ID,	IL,	IN,	IS,	JP,	KE	KG,	KR,	ΚZ,	LC,	LK,	LR,	LS,
		LT,	LU,	LV,	MA,	MD,	MG,	MK,	MN,	MW	, MX,	MZ,	NO,	NZ,	OM,	PH,	PL,
		PT,	RO,	RU,	SD,	SE,	SG,	SI,	SK,	SL	, TJ,	TM,	TR,	TT,	ΤZ,	UA,	UG,
		US,	UZ,	VN,	YU,	ZA,	ZW										
	RW:	GH,	GM,	KE,	LS,	MW,	MZ,	SD,	SL,	SZ	, TZ,	UG,	ZW,	AT,	BE,	CH,	CY,
											LU,						
		ВJ,	CF,	CG,	CI,	CM,	GA,	GN,	GQ,	GW	, ML,	MR,	NE,	SN,	TD,	TG	
Α	2002	0142	89		Α5		2002	0527		ΑU	2002-	1428	9		2	0011	114
E	1295	851			A1		2003	0326		ΕP	2001-	9827	85		2	0011	114
	R:	AT,	BE,	CH,	DE,	DK,	ES,	FR,	GB,	GR	, IT,	LI,	LŲ,	NL,	SE,	MC,	PT,
		ΙE,	SI,	LT,	LV,	FI,	RO,	MK,	CY,	AL	, TR						
JE	2003	2381	65		A2		2003	0827		JΡ	2002-	3785	38		2	0011	114
CN	1741	308			Α		2006	0301		CN	2005-	1008	5989		2	0011	114
US	2003	0824	52		A1		2003	0501		US	2002-	1811	63		2	0020	716
US	2005	2604	96		Al		2005	1124		US	2005-	1917	42		2	0050	728
PRIORIT	Y APP	LN.	INFO	. :						JΡ	2000-	3503	07		A 2	0001	116
										JР	2001-	2827	67		A 2	0010	918
										CN	2001-	8066	00		A3 2	0011	114
										JΡ	2002-	5427	38		A3 2	0011	114
										WO	2001-	JP99	67	1	W 2	0011	114
										US	2002-	1811	63		A3 2	0020	716
REFEREN	CE CO	UNT:			7	T	HERE	ARE	7 C	ITE	D REF	EREN	CES .	AVAI	LABL	E FO	R THIS

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Lithium containing multiple oxide, secondary nonaqueous battery

```
using the oxide, and manufacture of the oxide
AB
     The multiple oxide is Lil+x+\alphaNi(1-x-y+\delta)/2Mn(1-x-y-
     \delta)/2MyO2 [M = Ti, Cr, Fe, Co, Cu, Zn, Al, Ge, and/or Sn; x
     \leq 0.05, (-0.05 \leq (x+\alpha) \leq 0.05, y \leq 0.4,
     (-0.1) \le \delta \le 0.1 when y \le 0.2, and (-0.24)
     \leq \delta \leq 0.24 when 0.2 <y \leq 0.4]. The oxide is
     prepared by sintering a mixture of a Li compound and a compound containing Mn and Ni.
     The secondary battery is a Li battery using the oxide
     for cathode.
ST
     secondary battery cathode lithium manganese nickel oxide manuf
ΙT
     Battery cathodes
        (compns. and manufacture of (substituted) lithium manganese nickel oxides
        for cathodes for secondary lithium batteries)
ΙT
     12190-79-3, Cobalt lithium oxide (LiCoO2)
     RL: DEV (Device component use); USES (Uses)
        ((substituted) lithium manganese nickel oxide cathodes containing lithium
        cobaltate for secondary lithium batteries)
     427884-41-1P, Lithium manganese nickel oxide (Li0.99Mn0.5Ni0.5O2)
IT
     427884-42-2P, Lithium manganese nickel oxide (Li1.01Mn0.5Ni0.502)
     427884-43-3P, Lithium manganese nickel oxide (Li1.02Mn0.49Ni0.49O2)
     427884-44-4P, Lithium manganese nickel oxide (Lil.03Mn0.48Ni0.48O2)
     427884-45-5P, Lithium manganese nickel oxide (Lil.04Mn0.48Ni0.48O2)
     427884-46-6P, Lithium manganese nickel oxide (Li1.05Mn0.48Ni0.48O2)
     427884-47-7P, Cobalt lithium manganese nickel oxide
     (Co0.1Li0.99Mn0.45Ni0.45O2)
                                   427884-48-8P, Cobalt lithium manganese
     nickel oxide (Co0.25Li0.99Mn0.38Ni0.3802)
                                                  427884-49-9P, Cobalt lithium
     manganese nickel oxide (Co0.33Li0.99Mn0.33Ni0.34O2)
                                                            427884-50-2P, Cobalt
     lithium manganese nickel oxide (Co0.4Li0.99Mn0.3Ni0.3O2)
     RL: DEV (Device component use); IMF (Industrial manufacture); PREP
     (Preparation); USES (Uses)
        (compns. and manufacture of (substituted) lithium manganese nickel oxides
        for cathodes for secondary lithium batteries)
     ANSWER 120 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         2002:378515 CAPLUS
DOCUMENT NUMBER:
                         136:372252
TITLE:
                         Lithium containing transition metal oxide and its
                         manufacture
INVENTOR(S):
                         Suhara, Manabu; Sunahara, Kazuo; Kimura, Takashi;
                         Mihara, Takuya; Yukawa, Megumi
PATENT ASSIGNEE(S):
                         Seimi Chemical Co., Ltd., Japan
SOURCE:
                         Jpn. Kokai Tokkyo Koho, 8 pp.
                         CODEN: JKXXAF
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
     PATENT NO.
                                           APPLICATION NO.
                         KIND
                                DATE
                                                                    DATE
     ______
                         ____
                                _____
                                             ______
     JP 2002145623
                         A2
                                20020522
                                            JP 2000-337008
                                                                    20001106
                                             JP 2000-337008
PRIORITY APPLN. INFO.:
                                                                    20001106
     The oxide is LiNixMn1-x-yMyO2 (0.30 \leqx \leq0.65, yr
     \leq0.2, M = Fe, Co, Cr, Al, Ti, Ga, In, and/or Sn) with an average
     valence of Ni, Mn, and M being 2.700-2.970. The oxide is prepared by mixing
     a Li compound with a copptd. Ni-Mn-M compound and sintering at
     500-1000° in an inert atmospheric The oxide is useful for secondary
     battery cathodes.
ST
     secondary battery cathode lithium manganese nickel oxide compn
     manuf
TT
     Battery cathodes
        (compns. and manufacture of lithium transition metal oxides with controlled
        average transition metal valence for secondary lithium battery
        cathodes)
```

128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.5O2) 162684-16-4DP, Lithium manganese nickel oxide, substituted

IT

405890-05-3P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 405890-06-4P, Chromium lithium manganese nickel oxide (Cr0.1LiMn0.45Ni0.45O2) 405890-07-5P, Iron lithium manganese nickel oxide (Fe0.1LiMn0.45Ni0.4502) 405890-08-6P, Aluminum lithium manganese nickel oxide (AlO.1LiMnO.45NiO.45O2) 422520-44-3P, Lithium manganese nickel titanium oxide (LiMn0.45Ni0.45Ti0.102) 422520-45-4P, Gallium lithium manganese nickel oxide (Ga0.1LiMn0.45Ni0.45O2) 422520-46-5P, Indium lithium manganese nickel oxide 422520-48-7P, Lithium manganese nickel tin oxide (In0.1LiMn0.45Ni0.4502) (LiMn0.45Ni0.45Sn0.102) RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses) (compns. and manufacture of lithium transition metal oxides with controlled average transition metal valence for secondary lithium battery cathodes)

L3 ANSWER 121 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:

2002:253367 CAPLUS

DOCUMENT NUMBER:

136:281942

TITLE:

SOURCE:

Secondary lithium battery

INVENTOR(S):

Suhara, Manabu; Sunahara, Kazuo; Kimura, Takashi;

Mihara, Takuya

PATENT ASSIGNEE(S):

Seimi Chemical Co., Ltd., Japan Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002100358	A2	20020405	JP 2000-289767	20000925
PRIORITY APPLN. INFO.:			JP 2000-289767	20000925

TI Secondary lithium battery

AB The battery uses a cathode active mass mixture containing LixNiyMn1-y-zMzO2 (M = Fe, Co, Cr, and/or Al; 0.9 \leq x \leq 1.2; 0.40 \leq y \leq 0.60; z \leq 0.2) and LixpMn2O4 (1 \leq p \leq 1.3) having Fd3m spinel type structure.

ST secondary battery cathode lithium transition metal oxide mixt; nickel manganese lithium oxide cathode mixt battery

IT Battery cathodes

(cathodes containing (substituted) lithium manganese nickel oxide and spinel type lithium manganese oxide for secondary lithium batteries)

IT 128975-24-6, Lithium manganese nickel oxide (Li2MnNiO4) 179186-44-8, Lithium manganese nickel oxide (LiMnO.4NiO.6O2) 287718-96-1, Lithium manganese nickel oxide (LiMnO.45NiO.55O2) 405890-05-3, Cobalt lithium manganese nickel oxide (CoO.1LiMnO.45NiO.45O2) 405890-06-4, Chromium lithium manganese nickel oxide (CrO.1LiMnO.45NiO.45O2) 405890-07-5, Iron lithium manganese nickel oxide (FeO.1LiMnO.45NiO.45O2) 405890-08-6, Aluminum lithium manganese nickel oxide (Alo.1LiMnO.45NiO.45O2)

RL: DEV (Device component use); USES (Uses)

(cathodes containing (substituted) lithium manganese nickel oxide and spinel type lithium manganese oxide for secondary lithium batteries)

IT 130242-31-8, Lithium manganese oxide (Li1.05Mn2O4)

RL: DEV (Device component use); PRP (Properties); USES (Uses) (cathodes containing (substituted) lithium manganese nickel oxide and spinel type lithium manganese oxide for secondary lithium batteries)

L3 ANSWER 122 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:

2002:253366 CAPLUS

DOCUMENT NUMBER:

136:281941

TITLE: Secondary lithium battery

INVENTOR(S): Suhara, Manabu; Sunahara, Kazuo; Kimura, Takashi;

Mihara, Takuya

PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002100357 PRIORITY APPLN. INFO.:	A2	20020405	JP 2000-289763 JP 2000-289763	20000925 20000925

ΤI Secondary lithium battery

AΒ The battery uses a cathode active mass mixture containing LixNiyMn1-y-zMzO2 (M = Fe, Co, Cr, and/or Al; $0.9 \le x \le 1.2$; $0.40 \le y \le 0.60$; $z \le 0.2$) and Lix'CoO2 (0.9 $\le x$ '

≤1.1) having R3m rhombohedral structure.

ST secondary battery cathode lithium transition metal oxide mixt; manganese nickel lithium oxide cathode mixt battery; cobalt lithium oxide cathode mixt battery

ΙT Battery cathodes

> (cathodes containing (substituted) lithium manganese nickel oxide and rhombohedral lithium cobalt oxide for secondary lithium batteries)

IT 128975-24-6, Lithium manganese nickel oxide (Li2MnNiO4) 179186-44-8, Lithium manganese nickel oxide (LiMn0.4Ni0.602) 287718-96-1, Lithium manganese nickel oxide (LiMn0.45Ni0.5502) 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) Chromium lithium manganese nickel oxide (Cr0.1LiMn0.45Ni0.4502) 405890-07-5, Iron lithium manganese nickel oxide (Fe0.1LiMn0.45Ni0.45O2) 405890-08-6, Aluminum lithium manganese nickel oxide (Al0.1LiMn0.45Ni0.45O2)

RL: DEV (Device component use); USES (Uses) (cathodes containing (substituted) lithium manganese nickel oxide and rhombohedral lithium cobalt oxide for secondary lithium batteries)

ΙT 12190-79-3, Cobalt lithium oxide (CoLiO2)

> RL: DEV (Device component use); PRP (Properties); USES (Uses) (cathodes containing (substituted) lithium manganese nickel oxide and rhombohedral lithium cobalt oxide for secondary lithium batteries)

ANSWER 123 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3

ACCESSION NUMBER: 2002:253365 CAPLUS

DOCUMENT NUMBER: 136:265836

TITLE: Secondary lithium battery

INVENTOR(S): Suhara, Manabu; Sunahara, Kazuo; Kimura, Takashi;

Mihara, Takuya

PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002100356	A2	20020405	JP 2000-289761	20000925
PRIORITY APPLN. INFO.:			JP 2000-289761	20000925

ΤI Secondary lithium battery

AB The battery uses a cathode active mass mixture containing LixNiyMnl-y-zMzO2 (M = Fe, Co, Cr, and/or Al; $0.9 \le x \le 1.2$,

```
0.40 \le \le 0.60; z \le 0.2) and LixNipM'pO2 (M' = Co and/or
    Mn, 0.75 \le p \le 0.95) having an R3m rhombohedral structure.
ST
    secondary lithium battery cathode active mass mixt; lithium
    nickel manganese oxide cathode mixt secondary battery
ΙT
    Battery cathodes
        (cathodes containing lithium manganese nickel oxide and rhombohedral
        lithium nickel oxide for lithium batteries)
ΙT
    128975-24-6, Lithium manganese nickel oxide (Li2MnNiO4)
                                                              179186-42-6,
    Lithium manganese nickel oxide (LiMn0.6Ni0.4O2) 179186-44-8, Lithium
    manganese nickel oxide (LiMn0.4Ni0.602)
                                            216588-85-1, Cobalt lithium
    nickel oxide (Co0.18LiNi0.8202) 405240-98-4, Cobalt lithium
    manganese nickel oxide (Co0.11LiMn0.44Ni0.45O2)
                                                      405240-99-5, Chromium
    lithium manganese nickel oxide (Cr0.11LiMn0.44Ni0.4502)
                                                              405241-00-1,
    Iron lithium manganese nickel oxide (Fe0.11LiMn0.44Ni0.4502)
     405241-01-2, Aluminum lithium manganese nickel oxide
     (Al0.11LiMn0.44Ni0.4502)
    RL: DEV (Device component use); USES (Uses)
        (cathodes containing lithium manganese nickel oxide and rhombohedral
        lithium nickel oxide for lithium batteries)
    149887-20-7, Lithium manganese nickel oxide (LiMn0.1Ni0.902)
IT
    287718-96-1, Lithium manganese nickel oxide (LiMn0.45Ni0.5502)
    RL: DEV (Device component use); PRP (Properties); USES (Uses)
        (cathodes containing lithium manganese nickel oxide and rhombohedral
        lithium nickel oxide for lithium batteries)
    ANSWER 124 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        2002:216203 CAPLUS
DOCUMENT NUMBER:
                        136:250258
                        Method for preparation of lithiated oxide materials
TITLE:
                        with a well layered crystal structure for
                        battery cathodes
INVENTOR(S):
                        Paulsen, Jens Martin; Kieu, Loan Yen; Ammundsen, Brett
                        Graeme
PATENT ASSIGNEE(S):
                        Ilion Technology Corporation, USA; Pacific Lithium New
                        Zealand Limited
                        Eur. Pat. Appl., 25 pp.
SOURCE:
                        CODEN: EPXXDW
DOCUMENT TYPE:
                        Patent
                        English
LANGUAGE:
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
    PATENT NO.
                       KIND
                               DATE
                                           APPLICATION NO.
                                                                 DATE
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                               _____
                                           ______
                                                                  -----
    EP 1189296
                        A2
                                           EP 2001-302209
                                                                  20010309
                               20020320
    EP 1189296
                        A3 20050511
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO
                      A1
                                           US 2001-799935
                                                                  20010306
    US 2003022063
                               20030130
                        В2
    US 6660432
                               20031209
     JP 2002110167
                      A2
                               20020412
                                           JP 2001-181459
                                                                  20010615
     JP 3571671
                         B2
                               20040929
PRIORITY APPLN. INFO.:
                                           US 2000-232551P
                                                               P 20000914
    Method for preparation of lithiated oxide materials with a well layered
     crystal structure for battery cathodes
ST
    battery cathode lithiated oxide material
ΙT
    Battery cathodes
     Crystal structure
     Laminated materials
        (method for preparation of lithiated oxide materials with well layered
        crystal structure for battery cathodes)
     142395-58-2P, Lithium nickel oxide (Li0.45Ni0.550)
IT
                                                         403985-61-5P, Lithium
```

403985-62-6P, Cobalt lithium oxide

403985-64-8P, Cobalt lithium oxide (Co0.89Li1.1102)

nickel oxide (Li0.89Ni1.1102)

403985-65-9P, Cobalt lithium manganese nickel oxide (Co0.05Li1.1Mn0.42Ni0.43O2) 403985-66-0P, Cobalt lithium

(Co0.98Li1.0202)

manganese nickel oxide (Co0.04Li1.13Mn0.41Ni0.42O2) 403985-67-1P , Cobalt lithium manganese nickel oxide (Co0.09Li1.08Mn0.41Ni0.41O2) 403985-68-2P, Cobalt lithium manganese nickel oxide 403985-69-3P, Cobalt lithium manganese (Co0.09Li1.12Mn0.39Ni0.3902) nickel oxide (Co0.16Li1.06Mn0.39Ni0.39O2) 403985-70-6P, Cobalt lithium manganese nickel oxide (Co0.15Li1.11Mn0.37Ni0.37O2) 403985-71-7P, Cobalt manganese nickel hydroxide oxide 403985-72-8P 403985-73-9P, Cobalt lithium manganese nickel oxide (Co0.15Li1.09Mn0.38Ni0.38O2) RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (method for preparation of lithiated oxide materials with well layered crystal structure for battery cathodes)

L3 ANSWER 125 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:29020 CAPLUS

DOCUMENT NUMBER: 134:88776

TITLE: Cathode active mass, cathodes, secondary nonaqueous

electrolyte batteries, and manufacture of

the cathode active mass

INVENTOR(S): Yanai, Atsushi; Yanaida, Katsunori; Maeda, Takeshi;

Funabashi, Atsuhiro; Noma, Toshiyuki; Yonezu, Ikuo

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001006672	A2	20010112	JP 1999-176974	19990623
JP 3649953	B2	20050518		
US 6368749	В1	20020409	US 2000-597095	20000620
PRIORITY APPLN. INFO.:			JP 1999-176974 P	19990623

- TI Cathode active mass, cathodes, secondary nonaqueous electrolyte batteries, and manufacture of the cathode active mass
- ST secondary lithium battery cathode nickel cobalt oxide additive; aluminum sulfate secondary lithium battery cathode additive
- IT Battery cathodes

(lithium nickel cobalt oxide cathode active mass containing alum additives for secondary lithium batteries)

ΙT 12031-65-1, Lithium nickel oxide (LiNiO2) 12190-79-3, Cobalt lithium oxide (CoLiO2) 101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.502) 118819-08-2, Cobalt lithium manganese oxide (Co0.5LiMn0.502) 124320-82-7, Lithium nickel titanium oxide (Li2NiTiO4) 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.502) 140418-66-2, Iron lithium nickel oxide (Fe0.5LiNi0.502) 155604-51-6, Chromium lithium nickel oxide (Cr0.5LiNi0.502) 172484-43-4, Aluminum lithium nickel oxide (Al0.5LiNi0.502) 317831-74-6, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.5Ni0.402) 317831-75-7, Lithium nickel zinc oxide (LiNi0.5Zn0.502) 317831-76-8, Lithium magnesium nickel oxide (LiMq0.5Ni0.502) 317831-77-9, Copper lithium nickel oxide (Cu0.5LiNi0.502) 317831-78-0, Gallium lithium nickel oxide (Ga0.5LiNi0.502)

RL: DEV (Device component use); USES (Uses)

(lithium nickel cobalt oxide cathode active mass containing alum additives for secondary lithium batteries)

TT 7784-25-0, Aluminum ammonium sulfate [AlNH4(SO4)2] 10043-67-1, Aluminum potassium sulfate [AlK(SO4)2] 10102-71-3, Aluminum sodium sulfate [AlNa(SO4)2] 13530-57-9, Aluminum rubidium sulfate [AlRb(SO4)2] 14284-36-7, Aluminum cesium sulfate [AlCs(SO4)2]

RL: MOA (Modifier or additive use); USES (Uses)

(lithium nickel cobalt oxide cathode active mass containing alum additives for secondary lithium batteries)

ANSWER 126 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN L3ACCESSION NUMBER: 2000:723269 CAPLUS DOCUMENT NUMBER: 133:269461 TITLE: Nonaqueous lithium electrolyte secondary battery INVENTOR(S): Watanabe, Shoichiro; Iwamoto, Kazuya; Ueda, Atsushi; Nunome, Jun; Koshina, Hizuru Matsushita Electric Industrial Co., Ltd., Japan PATENT ASSIGNEE(S): SOURCE: Eur. Pat. Appl., 9 pp. CODEN: EPXXDW DOCUMENT TYPE: Patent English LANGUAGE: FAMILY ACC. NUM. COUNT: 1 PATENT INFORMATION: PATENT NO. KIND DATE DATE APPLICATION NO. --------------_____ -----EP 1043794 A2 A3 20001011 EP 2000-102959 20000214 EP 1043794 20021218 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO 20001226 US 1999-289589 19990409 US 6165647 Α Α CN 1270424 20001018 CN 2000-103653 20000229 PRIORITY APPLN. INFO.: US 1999-289589 A 19990409 OTHER SOURCE(S): MARPAT 133:269461 Nonaqueous lithium electrolyte secondary battery A battery (excellent in high temperature storage characteristics) AB comprises a pos. electrode having a pos. electrode active material containing an transition metal complex oxide containing lithium, a neg. electrode containing a neg. electrode material capable of storing and releasing a lithium ion, and an electrolytic solution containing a nonag. solvent, an electrolyte, and an organic compound expressed in formula I, where R1, R2, R3, R4, R5, and R6 have individually at least one of H and a group containing a vinyl group, and the number of H substituent is four or less. STnonag electrolyte secondary battery ΙT Fatty acids, uses RL: DEV (Device component use); USES (Uses) (esters, carbonates; nonaq. electrolyte lithium secondary battery) IT Secondary batteries (lithium; nonaq. electrolyte lithium secondary battery) TΤ Intermetallic compounds RL: DEV (Device component use); USES (Uses) (lithium; nonaq. electrolyte lithium secondary battery) Coordination compounds IT Inorganic compounds Organic compounds, uses RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte lithium secondary battery) ΙT Battery electrolytes (nonaq. electrolyte secondary battery) IT Fluoropolymers, uses Styrene-butadiene rubber, uses RL: TEM (Technical or engineered material use); USES (Uses) (nonag. electrolyte secondary battery) IT Lithium alloy RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte lithium secondary battery) IT 79-20-9, Methyl acetate 96-49-1, Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipro 623-96-1, Dipropyl carbonate 872-36-6, 1,3-Dioxol-2-one 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, 21324-40-3, Lithium hexafluorophosphate 174180-05-3, Cobalt

lithium oxide CoLi0-1.202 174180-06-4, Lithium nickel oxide Li0-1.2NiO2

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manganese oxide (Li0-1.2MnO2)
                                    296800-06-1, Cobalt lithium nickel oxide
     (Co0-0.9Li0-1.2Ni0.1-102) 296800-08-3, Cobalt lithium vanadium oxide
     (Co0.9-0.98Li0-1.2V0.02-0.102)
                                     296800-10-7, Lithium nickel titanium
    oxide (Li0-1.2Ni0.1-1Ti0-0.902)
                                     296800-12-9, Lithium nickel vanadium
    oxide (Li0-1.2Ni0.1-1V0-0.902)
                                     296800-15-2, Lithium manganese nickel
    oxide (Li0-1.2Mn0-0.9Ni0.1-102) 296800-18-5, Iron lithium nickel oxide
     (Fe0-0.9Li0-1.2Ni0.1-102) 296800-20-9, Cobalt lithium nickel titanium
    oxide ((Co, Ni, Ti) Li0-1.202) 296800-21-0, Cobalt lithium
    manganese nickel oxide ((Co,Mn,Ni)Li0-1.202) 296800-22-1, Aluminum
    cobalt lithium nickel oxide ((Al,Co,Ni)Li0-1.202) 296800-23-2, Cobalt
    lithium magnesium nickel oxide ((Co, Mg, Ni) Li0-1.202)
                                                           296800-25-4, Cobalt
    iron lithium nickel oxide ((Co, Fe, Ni) Li0-1.202) 296800-27-6, Cobalt
    lithium nickel zirconium oxide ((Co, Ni, Zr)Li0-1.202)
                                                           296800-28-7,
    Lithium manganese sodium oxide (LiO-1.2Mn1.1-2NaO-0.904)
                                                              296800-30-1,
    Lithium magnesium manganese oxide (Li0-1.2Mg0-0.9Mn1.1-204)
                                                                  296800-32-3,
    Lithium manganese scandium oxide (Li0-1.2Mn1.1-2Sc0-0.904)
                                                                 296800-35-6,
    Lithium manganese yttrium oxide (Li0-1.2Mn1.1-2Y0-0.904)
                                                               296800-38-9,
    Iron lithium manganese oxide (Fe0-0.9Li0-1.2Mn1.1-204)
                                                             296800-40-3,
    Cobalt lithium manganese oxide (Co0-0.9Li0-1.2Mn1.1-2O4)
                                                               296800-43-6,
    Lithium manganese nickel oxide (Li0-1.2Mn1.1-2Ni0-0.904)
                                                               296800-45-8,
    Lithium manganese titanium oxide (Li0-1.2Mnl.1-2Ti0-0.904)
                                                                 296800-47-0,
    Lithium manganese zirconium oxide (Li0-1.2Mn1.1-2Zr0-0.904)
                                                                  296800-49-2,
    Copper lithium manganese oxide (Cu0-0.9Li0-1.2Mn1.1-204)
                                                               296800-51-6,
    Lithium manganese zinc oxide (Li0-1.2Mnl.1-2Zn0-0.904)
                                                             296800-52-7,
    Aluminum lithium manganese oxide (AlO-0.9LiO-1.2Mnl.1-2O4)
                                                                 296800-54-9,
    Lead lithium manganese oxide (Pb0-0.9Li0-1.2Mn1.1-2O4)
                                                            296800-56-1,
    Antimony lithium manganese oxide (Sb0-0.9Li0-1.2Mn1.1-2O4)
    RL: DEV (Device component use); USES (Uses)
        (nonaq. electrolyte lithium secondary battery)
IT
    91-14-5
              105-06-6, p-Divinylbenzene 108-57-6
                                                      3048-52-0,
    1,3,5-Trivinylbenzene
    RL: MOA (Modifier or additive use); USES (Uses)
        (nonag. electrolyte lithium secondary battery)
IT
    9003-07-0, Polypropylene
    RL: DEV (Device component use); USES (Uses)
        (nonaq. electrolyte secondary battery)
TΤ
    9003~55-8
    RL: TEM (Technical or engineered material use); USES (Uses)
        (styrene-butadiene rubber, nonaq. electrolyte secondary battery
L3
    ANSWER 127 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                        1999:814077 CAPLUS
DOCUMENT NUMBER:
                        132:52401
TITLE:
                        Secondary nonaqueous electrolyte lithium
                        batteries using specific electrolyte solutions
                        Sakaguchi, Taeko; Sunakawa, Takuya; Fujimoto,
INVENTOR(S):
                        Hiroyuki; Watanabe, Hiroshi; Noma, Toshiyuki; Nishio,
                        Akiharu
PATENT ASSIGNEE(S):
                        Sanyo Electric Co., Ltd., Japan
SOURCE:
                        Jpn. Kokai Tokkyo Koho, 9 pp.
                        CODEN: JKXXAF
DOCUMENT TYPE:
                        Patent
LANGUAGE:
                        Japanese
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
    PATENT NO.
                        KIND DATE
                                           APPLICATION NO.
                                                                  DATE
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                                           -----
    JP 11354156
                        A2
                               19991224
                                           JP 1998-157759
                                                                  19980605
PRIORITY APPLN. INFO.:
                                                                 19980605
                                           JP 1998-157759
OTHER SOURCE(S): MARPAT 132:52401
ΤI
    Secondary nonaqueous electrolyte lithium batteries using
    specific electrolyte solutions
AB
    The batteries use cathodes of LiaCobMcNil-b-cO2 (M = Mn, B, Mg,
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188405-67-6, Lithium manganese oxide Li0-1.2Mn2O4 296800-04-9, Lithium

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Al, Si, Ca, Ti, V, Fe, Cu, Zn, and/or Ga; a = 0-1.2; b, c = 0.01-0.4; b + 0.01-0.4
c = 0.02-0.5), anodes of Li or Li-intercalatable substances, separators,
and nonaq. electrolyte solns. containing electrolyte salts selected from
LiN(CnF2n+1SO2)(CmF2m+1SO2) and LiC(CnF2n+1SO2)2(CmF2m+1SO2) (n, m = 1-5;
n = m \neq 1) and solvents including 5- or 6-membered heterocycles
containing O, S, and/or N atoms. The batteries have long cycle
life.
battery cathode lithium imide electrolyte; heterocyclic solvent
lithium electrolyte battery; cycle life battery
electrolyte lithium imide
Secondary batteries
   (lithium; secondary Li batteries using mixed oxide cathodes
   and Li electrolytes in nonaq. heterocyclic solvents for long cycle
   life)
Heterocyclic compounds
RL: DEV (Device component use); USES (Uses)
   (nitrogen; secondary Li batteries using mixed oxide cathodes
   and Li electrolytes in nonaq. heterocyclic solvents for long cycle
   life)
Heterocyclic compounds
RL: DEV (Device component use); USES (Uses)
   (oxygen; secondary Li batteries using mixed oxide cathodes
   and Li electrolytes in nonaq. heterocyclic solvents for long cycle
   life)
Battery cathodes
  Battery electrolytes
   (secondary Li batteries using mixed oxide cathodes and Li
   electrolytes in nonaq. heterocyclic solvents for long cycle life)
Heterocyclic compounds
RL: DEV (Device component use); USES (Uses)
   (sulfur; secondary Li batteries using mixed oxide cathodes
   and Li electrolytes in nonaq. heterocyclic solvents for long cycle
   life)
109-02-4, N-Methylmorpholine
                               126-33-0, Sulfolane
                                                     288-14-2, Isoxazole
872-36-6, Vinylene carbonate
                               872-50-4, uses
                                                1120-71-4, 1,3-Propane
          28452-93-9, Butadiene sulfone
                                         119229-99-1
                                                        132843-44-8,
Lithium bis(pentafluoroethylsulfonyl)imide
                                            176719-70-3, Lithium
trifluoromethanesulfonyl(nonafluorobutanesulfonyl)imide
                                                          210406-62-5
227098-71-7
                            252877-07-9, Cobalt lithium manganese nickel
              252877-06-8
oxide (Co0.6LiMn0.3Ni0.102)
RL: DEV (Device component use); USES (Uses)
   (secondary Li batteries using mixed oxide cathodes and Li
   electrolytes in nonaq. heterocyclic solvents for long cycle life)
191024-83-6P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.1Ni0.502)
193215-05-3P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.2Ni0.602)
193215-53-1P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502)
193215-92-8P, Cobalt lithium manganese nickel oxide
(Co0.1LiMn0.4Ni0.502)
                        223923-05-5P, Cobalt lithium manganese nickel
oxide (Co0.3LiMn0.1Ni0.602)
                              244304-31-2P, Cobalt lithium manganese
nickel oxide (Co0.01LiMn0.01Ni0.9802)
                                        244304-32-3P, Cobalt lithium
manganese nickel oxide (Co0.01LiMn0.2Ni0.7902) 244304-33-4P,
Cobalt lithium manganese nickel oxide (Co0.01LiMn0.4Ni0.5902)
244304-34-5P, Cobalt lithium manganese nickel oxide
                          244304-35-6P, Cobalt lithium manganese nickel
(Co0.2LiMn0.01Ni0.7902)
oxide (Co0.4LiMn0.01Ni0.5902)
                                244304-36-7P, Cobalt lithium nickel borate
oxide (Co0.3LiNi0.6(BO3)0.101.7)
                                   244304-37-8P, Cobalt lithium magnesium
nickel oxide (Co0.3LiMg0.1Ni0.602)
                                     244304-38-9P, Aluminum cobalt lithium
nickel oxide (Al0.1Co0.3LiNi0.602)
                                     244304-40-3P, Calcium cobalt lithium
nickel oxide (Ca0.1Co0.3LiNi0.602)
                                     244304-42-5P, Cobalt lithium nickel
titanium oxide (Co0.3LiNi0.6Ti0.102)
                                       244304-43-6P, Cobalt lithium nickel
vanadium oxide (Co0.3LiNi0.6V0.102)
                                      244304-45-8P, Cobalt iron lithium
nickel oxide (Co0.3Fe0.1LiNi0.602)
                                     244304-46-9P, Cobalt copper lithium
nickel oxide (Co0.3Cu0.1LiNi0.602)
                                     244304-47-0P, Cobalt lithium nickel
zinc oxide (Co0.3LiNi0.6Zn0.102)
                                   244304-48-1P, Cobalt gallium lithium
nickel oxide (Co0.3Ga0.1LiNi0.602)
                                     252877-05-7P, Cobalt lithium nickel
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oxide silicate (Co0.3LiNi0.601.6(SiO4)0.1)

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RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses) (secondary Li batteries using mixed oxide cathodes and Li electrolytes in nonaq. heterocyclic solvents for long cycle life) ANSWER 128 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 1999:706080 CAPLUS DOCUMENT NUMBER: 131:312432 TITLE: Cathode active mass for secondary lithium batteries and batteries using them INVENTOR(S): Miyashita, Takahiro; Kitamura, Hajime; Yamato, Koji; Ota, Satoshi PATENT ASSIGNEE(S): Chuo Denki Kogyo Co., Ltd., Japan SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp. CODEN: JKXXAF DOCUMENT TYPE: Patent LANGUAGE: Japanese FAMILY ACC. NUM. COUNT: PATENT INFORMATION: PATENT NO. KIND APPLICATION NO. DATE DATE ______ ____ -----______ _____ JP 11307094 A2 19991105 JP 1998-109746 19980420 PRIORITY APPLN. INFO.: JP 1998-109746 19980420 Cathode active mass for secondary lithium batteries and batteries using them The title cathode active mass comprises Lil-aNil-b-c-dMnbCocMdO2 (M is an addnl. element; a = -0.15 to 0.10; b = 0.02-0.45; c = 0-0.50; d = 0-0.20) and shows remained Li amount x = 0.20-0.30 after Li desorption and heat generation 0-30% while heating at 175-300° vs. that of LixNiO2. Secondary batteries using the cathodes are also claimed. The active mass provides high capacity, long cycle life, low cost, and good thermal stability. lithium nickel manganese cobalt oxide cathode; battery lithium mixed oxide cathode Battery cathodes (Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries) Secondary batteries (lithium; Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries) Alkali metals, uses Alkaline earth metals Group IIB elements Group IIIA elements Group IVA elements Transition metals, uses RL: DEV (Device component use); USES (Uses) (mixed oxides containing; Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries) 247565-29-3, Cobalt lithium manganese nickel oxide (Co0.15Li1.05Mn0.2Ni0.6502) 247565-30-6, Cobalt lithium manganese nickel oxide (Co0.17Li0.9Mn0.04Ni0.7902) 247565-32-8, Cobalt lithium manganese nickel oxide (Co0.17Li0.92Mn0.04Ni0.7902) 247565-33-9, Cobalt lithium manganese nickel oxide (Co0.17Li0.94Mn0.04Ni0.7902) 247565-34-0, Cobalt lithium manganese nickel oxide (Co0.17Li0.95Mn0.04Ni0.7902) 247565-35-1, Cobalt lithium manganese nickel oxide (Co0.17Li0.98Mn0.04Ni0.79O2) 247565-36-2, Cobalt lithium manganese nickel oxide (Co0.17LiMn0.04Ni0.7902) 247565-37-3, Cobalt lithium manganese nickel oxide (Co0.17Li1.08Mn0.04Ni0.7902) 247565-38-4, Cobalt lithium manganese nickel oxide (Co0.17Li1.15Mn0.04Ni0.7902) 247565-39-5, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.02Ni0.7902) 247565-40-8, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.08Ni0.7902) 247565-41-9, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.3Ni0.502) 247565-42-0, Cobalt lithium manganese nickel oxide (Co0.2Li1.05Mn0.4Ni0.4O2) 247565-43-1, Lithium manganese nickel oxide

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(Lil.05Mn0.3Ni0.702) 247565-45-3, Cobalt lithium manganese nickel oxide (Co0.03Li1.05Mn0.3Ni0.6802) 247565-47-5, Cobalt lithium manganese nickel oxide (Co0.05Li1.05Mn0.3Ni0.6502) 247565-48-6, Cobalt lithium manganese nickel oxide (Co0.08Li1.05Mn0.3Ni0.6302) 247565-50-0, Cobalt lithium manganese nickel oxide (Co0.1Li1.05Mn0.3Ni0.602) 247565-51-1, Cobalt lithium manganese nickel oxide (Co0.15Li1.05Mn0.3Ni0.5502) 247565-52-2, Cobalt lithium manganese nickel oxide (Co0.25Li1.05Mn0.3Ni0.4502) 247565-54-4 247565-53-3 247565-55-5 247565-57-7 247565-59-9 247565-61-3 247565-63-5 247565-65-7 247565-66-8 247565-69-1 247565-71-5 247565-73-7 247565-76-0 247565-77-1 247565-78-2 247565-79-3 247565-80-6 247565-81-7 247565-82-8 RL: DEV (Device component use); USES (Uses) (Li mixed oxides containing Ni, Mn, and Co for cathodes in batteries) ANSWER 129 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN ACCESSION NUMBER: 1999:636148 CAPLUS DOCUMENT NUMBER: 131:245574 TITLE: Composite oxide cathode material for lithium secondary battery INVENTOR(S): Sunagawa, Takuya; Watanabe, Hiroshi; Nohma, Toshiyuki; Nishio, Koji PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan SOURCE: Eur. Pat. Appl., 13 pp. CODEN: EPXXDW DOCUMENT TYPE: Patent LANGUAGE: English FAMILY ACC. NUM. COUNT: PATENT INFORMATION: PATENT NO. KIND DATE APPLICATION NO. DATE -----______ ---------19990922 EP 1999-104100 EP 944125 A1 19990318 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO JP 1998-92734 JP 11273677 A2 19991008 19980319 JP 3524762 B2 20040510 AA CA 2265372 CA 1999-2265372 19990919 19990316 С CA 2265372 20041102 US 6333128 B1 20011225 US 1999-272554 19990319 JP 1998-92734 PRIORITY APPLN. INFO.: A 19980319 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT Composite oxide cathode material for lithium secondary battery A cathode material for a lithium secondary battery comprises a composite oxide powder with median diameter 3.0-20.0 µm containing ≤10 volume% $\leq 1-\mu m$ particles, represented by the general formula LiaCobMcNil-b-cO2, where M is ≥ 1 of B, Mg, Al, Si, Ca, Sc, Ti, V, Cr, Mn, Fe, Cu, Zn, Ga, Ge, Y, Nb, Mo, Ru, Rh, Pd, Ag, Cd, In and Sn; $0 \le a \le 1.2$; $0.01 \le b \le 0.4$; $0.01 \le c \le 0.4$; and $0.02 \le b + c \le 0.5$. The lithium secondary battery exhibits improved charge-discharge cycle characteristics. composite oxide cathode lithium secondary battery Battery cathodes (composite oxide cathode material for lithium secondary battery Secondary batteries (lithium; composite oxide cathode material for lithium secondary battery) 120062-99-9, Cobalt copper lithium nickel oxide 177997-11-4, Cobalt gallium lithium nickel oxide 177997-12-5, Boron cobalt lithium nickel 177997-13-6, Aluminum cobalt lithium nickel oxide 177997-14-7, Cobalt indium lithium nickel oxide 177997-15-8, Cobalt lithium nickel tin oxide 180997-14-2, Cobalt lithium magnesium nickel oxide

182442-94-0, Cobalt lithium nickel vanadium oxide 182442-95-1, Cobalt lithium manganese nickel oxide 182442-96-2, Cobalt iron lithium nickel

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182442-97-3, Cobalt lithium nickel zinc oxide
     oxide
                                                            191024-83-6,
    Cobalt lithium manganese nickel oxide (Co0.4LiMn0.1Ni0.502)
                                                                   193215-05-3,
     Cobalt lithium manganese nickel oxide (Co0.2LiMn0.2Ni0.602)
                                                                   193215-53-1,
     Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502)
     193215-92-8, Cobalt lithium manganese nickel oxide
                             210353-05-2, Calcium cobalt lithium nickel oxide
     (Co0.1LiMn0.4Ni0.502)
     223923-05-5, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.1Ni0.602)
     244304-18-5, Cobalt lithium nickel silicon oxide
                                                       244304-19-6, Cobalt
     lithium nickel scandium oxide 244304-20-9, Cobalt lithium nickel
     titanium oxide
                     244304-21-0, Chromium cobalt lithium nickel oxide
     244304-22-1, Cobalt germanium lithium nickel oxide
                                                         244304-23-2, Cobalt
     lithium nickel yttrium oxide
                                  244304-24-3, Cobalt lithium nickel niobium
            244304-25-4, Cobalt lithium molybdenum nickel oxide 244304-26-5,
     Cobalt lithium nickel ruthenium oxide 244304-27-6, Cobalt lithium nickel
     rhodium oxide
                    244304-28-7, Cobalt lithium nickel palladium oxide
     244304-29-8, Cobalt lithium nickel silver oxide
                                                      244304-30-1, Cadmium
     cobalt lithium nickel oxide 244304-31-2, Cobalt lithium manganese nickel
     oxide (Co0.01LiMn0.01Ni0.9802)
                                     244304-32-3, Cobalt lithium manganese
     nickel oxide (Co0.01LiMn0.2Ni0.7902) 244304-33-4, Cobalt lithium
    manganese nickel oxide (Co0.01LiMn0.4Ni0.5902)
                                                      244304-34-5, Cobalt
     lithium manganese nickel oxide (Co0.2LiMn0.01Ni0.7902)
                                                              244304-35-6,
     Cobalt lithium manganese nickel oxide (Co0.4LiMn0.01Ni0.5902)
     244304-36-7, Cobalt lithium nickel borate oxide (Co0.3LiNi0.6(BO3)0.101.7)
     244304-37-8, Cobalt lithium magnesium nickel oxide (Co0.3LiMg0.1Ni0.602)
     244304-38-9, Aluminum cobalt lithium nickel oxide (Al0.1Co0.3LiNi0.602)
     244304-39-0, Cobalt lithium nickel scandium oxide (Co0.3LiNi0.6Sc0.102)
     244304-40-3, Calcium cobalt lithium nickel oxide (Ca0.1Co0.3LiNi0.602)
     244304-42-5, Cobalt lithium nickel titanium oxide (Co0.3LiNi0.6Ti0.102)
     244304-43-6, Cobalt lithium nickel vanadium oxide (Co0.3LiNi0.6V0.102)
     244304-44-7, Chromium cobalt lithium nickel oxide (Cr0.1Co0.3LiNi0.602)
     244304-45-8, Cobalt iron lithium nickel oxide (Co0.3Fe0.1LiNi0.602)
     244304-46-9, Cobalt copper lithium nickel oxide (Co0.3Cu0.1LiNi0.602)
     244304-47-0, Cobalt lithium nickel zinc oxide (Co0.3LiNi0.6Zn0.102)
     244304-48-1, Cobalt gallium lithium nickel oxide (Co0.3Ga0.1LiNi0.602)
     244304-49-2, Cobalt germanium lithium nickel oxide (Co0.3Ge0.1LiNi0.602)
     244304-50-5, Cobalt lithium nickel yttrium oxide (Co0.3LiNi0.6Y0.102)
     244304-51-6, Cobalt lithium nickel niobium oxide (Co0.3LiNi0.6Nb0.102)
     244304-52-7, Cobalt lithium molybdenum nickel oxide (Co0.3LiMo0.1Ni0.602)
     244304-53-8, Cobalt lithium nickel ruthenium oxide (Co0.3LiNi0.6Ru0.102)
     244304-54-9, Cobalt lithium nickel rhodium oxide (Co0.3LiNi0.6Rh0.102)
     244304-55-0, Cobalt lithium nickel palladium oxide (Co0.3LiNi0.6Pd0.102)
     244304-56-1, Cobalt lithium nickel silver oxide (Co0.3LiNi0.6Ag0.102)
     244304-57-2, Cadmium cobalt lithium nickel oxide (Cd0.1Co0.3LiNi0.602)
     244304-58-3, Cobalt indium lithium nickel oxide (Co0.3In0.1LiNi0.602)
     244304-59-4, Cobalt lithium nickel tin oxide (Co0.3LiNi0.6Sn0.102)
     RL: DEV (Device component use); TEM (Technical or engineered material
     use); USES (Uses)
        (composite oxide cathode material for lithium secondary battery
    ANSWER 130 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
                        1998:703437 CAPLUS ·
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         129:304531
                         Cathode material for use in nonaqueous-electrolyte
TITLE:
                         battery, its preparation, and
                         nonaqueous-electrolyte battery having
                         cathode prepared from this material
                         Sunagawa, Takuya; Watanabe, Hiroshi; Ohshita, Ryuji;
INVENTOR(S):
                         Fujimoto, Masahisa; Nohma, Toshiyuki; Nishio, Koji
PATENT ASSIGNEE(S):
                         Sanyo Electric Co., Ltd., Japan
SOURCE:
                         Eur. Pat. Appl., 22 pp.
                         CODEN: EPXXDW
DOCUMENT TYPE:
                         Patent
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FAMILY ACC. NUM. COUNT: PATENT INFORMATION:

LANGUAGE:

English

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DATE
    PATENT NO.
                      KIND DATE
                                         APPLICATION NO.
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                                           ______
                                                                 _____
    EP 872450 A1 19981021
EP 872450 B1 20031105
                                        EP 1998-106725
                                                                19980414
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO
                      A2
                                           JP 1997-97239
    JP 10289731
                               19981027
                                                                  19970415
                               19990129 JP 1997-230145
                        A2
                                                                 19970827
    JP 11025957
                        B2
     JP 3561607
                               20040902
                                                             A 19970415
PRIORITY APPLN. INFO.:
                                           JP 1997-97239
                                           JP 1997-117341 A 19970508
JP 1997-230145 A 19970827
REFERENCE COUNT:
                        7
                              THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS
                              RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
    Cathode material for use in nonaqueous-electrolyte battery, its
ΤI
    preparation, and nonaqueous-electrolyte battery having cathode
    prepared from this material
    The title battery includes an anode, a nonaq.-electrolyte, and a
AΒ
    cathode using a Li-metal compound oxide as a cathode, which contains at
    least Ni, Co, and Mn, and has a peak with a full width at half maximum of
    \leq 0.22^{\circ} at 2\theta = 18.71 \pm 0.25^{\circ} as measured by
    the powder x-ray diffraction anal. using a Cu Kα x-ray source or
     employing a cathode material composed of a Li-metal compound oxide which
    contains at least Ni, Co and Mn, and a nonag. electrolyte which includes a
    solvent containing ethylene carbonate and a solute containing ≥1 type of
    F-containing compound
    lithium metal compd oxide battery cathode; nickel lithium compd
ST
    oxide battery cathode; cobalt lithium compd oxide
    battery cathode; manganese lithium compd oxide battery
    cathode
ΙT
    Secondary batteries
        (lithium, lithium-ion; performance of)
IT
    Battery cathodes
        (lithium-metal compound oxide for use in nonaq.-electrolyte)
    146956-42-5P, Cobalt lithium manganese nickel oxide (Co0.4LiMn0.2Ni0.4O2)
ΙT
    176206-89-6P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.2Ni0.502)
    179802-94-9P, Cobalt lithium manganese nickel oxide
     (Co0.05LiMn0.05Ni0.902) 179802-96-1P, Cobalt lithium manganese nickel
                                 190902-70-6P, Cobalt lithium manganese
     oxide (Co0.2LiMn0.1Ni0.702)
    nickel oxide (Co0.1LiMn0.05Ni0.8502) 191024-83-6P, Cobalt lithium
    manganese nickel oxide (Co0.4LiMn0.1Ni0.502)
                                                  193214-71-0P
    193215-05-3P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.2Ni0.602)
    193215-92-8P, Cobalt lithium manganese nickel oxide
     (Co0.1LiMn0.4Ni0.502)
                            214473-55-9P, Cobalt lithium manganese nickel
    oxide (Co0.01LiMn0.09Ni0.902) 214473-56-0P, Cobalt lithium manganese
    nickel oxide (Co0.09LiMn0.01Ni0.902) 214473-57-1P 214473-59-3P
    214473-60-6P 214473-63-9P 214473-65-1P 214473-66-2P 214473-68-4P
     214473-69-5P 214473-70-8P 214473-71-9P 214473-72-0P
    214473-73-1P 214473-74-2P, Cobalt lithium manganese nickel oxide
     (Co0.45LiMn0.05Ni0.502) 214473-75-3P, Cobalt lithium manganese nickel
     oxide (Co0.1LiMn0.85Ni0.0502) 214473-76-4P, Cobalt lithium manganese
    nickel oxide (Co0.9LiMn0.05Ni0.05O2) 214473-77-5P 214473-78-6P
    214473-79-7P 214473-80-0P 214473-81-1P 214473-82-2P 214473-85-5P
     214473-86-6P 214473-87-7P 214473-88-8P
    RL: DEV (Device component use); PEP (Physical, engineering or chemical
    process); PRP (Properties); SPN (Synthetic preparation); PREP
     (Preparation); PROC (Process); USES (Uses)
        (cathode material for use in nonaq.-electrolyte battery and
        its preparation)
     96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
IT
     Diethyl carbonate 616-38-6, Dimethyl carbonate 14283-07-9, Lithium
     fluoroborate 21324-40-3, Phosphate(1-), hexafluoro-, lithium
     132843-44-8, Lithium bis(pentafluoroethylsulfonyl)imide
     RL: DEV (Device component use); USES (Uses)
        (cathode material for use in nonaq.-electrolyte battery
```

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ANSWER 131 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
L3
ACCESSION NUMBER:
                         1998:414870 CAPLUS
DOCUMENT NUMBER:
                         129:97736
TITLE:
                         Cathode active material for lithium batteries
                         , and its manufacture
INVENTOR(S):
                         Yasuda, Hideo
PATENT ASSIGNEE(S):
                         Japan Storage Battery Co., Ltd., Japan
SOURCE:
                         Eur. Pat. Appl., 10 pp.
                         CODEN: EPXXDW
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         English
FAMILY ACC. NUM. COUNT:
                         1
PATENT INFORMATION:
                                DATE
     PATENT NO.
                         KIND
                                            APPLICATION NO.
                                                                   DATE
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                         ____
                                _____
                                            _____
                                                                   _____
                          A2
     EP 849817
                                19980624
                                            EP 1997-122556
                                                                   19971219
     EP 849817
                         Α3
                               19990324
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
                                19980701
     CN 1186351
                          Α
                                            CN 1997-121746
                                                                   19971219
     JP 11213999
                          Α2
                                19990806
                                            JP 1997-365262
                                                                   19971219
     US 5993998
                          Α
                                19991130
                                            US 1997-994326
                                                                   19971219
PRIORITY APPLN. INFO.:
                                            JP 1996-355280
                                                                A 19961220
                                            JP 1997-337961
                                                               A 19971121
ΤT
     Cathode active material for lithium batteries, and its
     manufacture
ST
     lithium battery cathode active material; nickel lithium complex
     oxide battery cathode
IT
     Battery cathodes
        (lithium-containing complex nickel oxide active material for)
     209668-05-3P, Cobalt lithium nickel oxide (Co0.02Li1.8Ni0.9802)
IT
     209668-06-4P, Cobalt lithium nickel oxide (Co0.05Li1.4Ni0.9502)
     209668-08-6P, Cobalt lithium nickel oxide (Co0.1Li1.8Ni0.902)
     209668-09-7P, Cobalt lithium nickel oxide (Co0.05Li2.2Ni0.9502)
     209668-10-0P, Cobalt lithium nickel oxide (Co0.08Li1.9Ni0.9202)
     RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
     preparation); PREP (Preparation); USES (Uses)
        (cathode active material for lithium batteries and its
        manufacture)
ΙT
     177997-13-6, Aluminum cobalt lithium nickel oxide 182442-95-1, Cobalt
     lithium manganese nickel oxide 209667-93-6, Cobalt lithium nickel oxide
     ((Co, Ni)Li0.25-202)
                           209667-94-7, Lithium manganese nickel oxide
     (Li0.25-2(Mn, Ni)02)
                           209667-95-8, Aluminum lithium nickel oxide
     ((Al, Ni) Li0.25-202)
                           209667-96-9, Lithium nickel oxide sulfide
     (Li0.25-2Ni0-102S0-1)
                             209667-97-0, Cobalt lithium nickel oxide
                          209667-98-1, Lithium manganese nickel oxide
     ((Co, Ni) Lil.4-202)
     (Li1.4-2(Mn, Ni)O2)
                          209667-99-2, Aluminum lithium nickel oxide
     ((Al, Ni)Li1.4-202)
                          209668-00-8, Lithium nickel oxide sulfide
     (Li1.4-2Ni0-102S0-1)
                            209668-01-9, Cobalt lithium nickel oxide
     (Co0.02-1.6Li0.25-2Ni0-102) 209668-02-0, Cobalt lithium
    manganese nickel oxide (Co0.02-0.6Li0.25-2(Mn,Ni)O2)
                                                            209668-03-1,
    Aluminum cobalt lithium nickel oxide ((Al, Ni)Co0.02-0.6Li0.25-202)
     209668-04-2, Cobalt lithium nickel oxide sulfide (Co0.02-0.6Li0.25-2Ni0-
     102S0-1)
     RL: TEM (Technical or engineered material use); USES (Uses)
        (cathode active material for lithium batteries and its
       manufacture)
L3
    ANSWER 132 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:
                         1997:543493 CAPLUS
DOCUMENT NUMBER:
                         127:138098
TITLE:
                         Cathode active material for secondary lithium
                         battery, manufacture of this material, and
```

secondary lithium battery

INVENTOR(S): Aoki, Takashi; Nagata, Mikito; Tsukamoto, Junichi PATENT ASSIGNEE(S):

Japan Storage Battery Company Limited, Japan

SOURCE: Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent English LANGUAGE:

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 782206	A1	19970702	EP 1996-120921	19961227
EP 782206	B1	20030416		
R: DE, FR, GB				
JP 09237631	A2	19970909	JP 1996-342516	19961205
CN 1156910	Α	19970813	CN 1996-114088	19961227
US 5718989	Α	19980217	US 1996-774226	19961227
US 5795558	Α	19980818	US 1997-947494	19971009
PRIORITY APPLN. INFO.:			JP 1995-353033	A 19951229
			JP 1996-342516	A 19961205
			US 1996-774226	A3 19961227

- ΤI Cathode active material for secondary lithium battery,
- manufacture of this material, and secondary lithium battery ST lithium battery cathode active material; oxide complex lithium battery cathode; nickel cobalt manganese aluminum lithium oxide
- IT Battery cathodes

(active material for secondary lithium)

```
113066-89-0P, Cobalt lithium
ΙT
     12031-65-1P, Lithium nickel oxide (LiNiO2)
     nickel oxide (Co0.2LiNi0.802)
                                    116327-69-6P, Cobalt lithium nickel oxide
     (Co0.1LiNi0.902)
                        143623-49-8P, Cobalt lithium nickel oxide
     (Co0.25LiNi0.7502)
                          143623-51-2P, Cobalt lithium nickel oxide
     (Co0.15LiNi0.8502)
                          144973-42-2P, Lithium manganese nickel oxide
     (LiMn0.3Ni0.702)
                        149887-20-7P, Lithium manganese nickel oxide
     (LiMn0.1Ni0.902)
                        163596-49-4P, Lithium manganese nickel oxide
     (LiMn0.2Ni0.802)
                        164175-46-6P, Aluminum lithium nickel oxide
     (Al0.05LiNi0.9502)
                          164175-47-7P, Aluminum lithium nickel oxide
                        172484-40-1P, Aluminum lithium nickel oxide
     (Al0.2LiNi0.802)
                        179186-44-8P, Lithium manganese nickel oxide
     (Al0.1LiNi0.902)
                        179802-95-0P, Cobalt lithium manganese nickel oxide
     (LiMn0.4Ni0.602)
     (Co0.1LiMn0.1Ni0.802)
                             179802-96-1P, Cobalt lithium manganese nickel
     oxide (Co0.2LiMn0.1Ni0.702)
                                   190902-69-3P, Aluminum lithium nickel oxide
     (Al0.15LiNi0.8502)
                          193214-22-1P, Aluminum cobalt lithium nickel oxide
                               193214-24-3P, Aluminum cobalt lithium nickel
     (Al0.05Co0.1LiNi0.8502)
     oxide (Al0.05Co0.15LiNi0.802)
                                     193214-25-4P, Aluminum cobalt lithium
     nickel oxide (Al0.05Co0.2LiNi0.7502)
                                            193214-27-6P, Aluminum cobalt
     lithium nickel oxide (Al0.05Co0.25LiNi0.702)
                                                    193214-33-4P, Aluminum
     cobalt lithium nickel oxide (Al0.1Co0.1LiNi0.802)
                                                         193214-37-8P, Aluminum
     cobalt lithium nickel oxide (Al0.1Co0.15LiNi0.7502)
                                                           193214-39-0P,
     Aluminum cobalt lithium nickel oxide (Al0.1Co0.2LiNi0.702)
                                                                  193214-41-4P,
     Aluminum cobalt lithium nickel oxide (Al0.1Co0.25LiNi0.6502)
     193214-44-7P, Aluminum cobalt lithium nickel oxide (Al0.15Co0.1LiNi0.75O2)
     193214-45-8P, Aluminum cobalt lithium nickel oxide (Al0.15Co0.15LiNi0.702)
     193214-46-9P, Aluminum cobalt lithium nickel oxide (Al0.15Co0.25LiNi0.602)
     193214-47-0P, Aluminum cobalt lithium nickel oxide (Al0.2Co0.1LiNi0.702)
     193214-48-1P, Aluminum cobalt lithium nickel oxide (Al0.2Co0.15LiNi0.6502)
     193214-49-2P, Aluminum cobalt lithium nickel oxide (Al0.2Co0.2LiNi0.602)
     193214-50-5P, Aluminum cobalt lithium nickel oxide (Al0.2Co0.25LiNi0.5502)
     193214-51-6P, Aluminum cobalt lithium nickel oxide (Al0.15Co0.2LiNi0.6502)
     193214-53-8P, Cobalt lithium manganese nickel oxide
     (Co0.15LiMn0.1Ni0.7502)
                               193214-55-OP, Cobalt lithium manganese nickel
                                     193214-56-1P, Aluminum lithium manganese
     oxide (Co0.25LiMn0.1Ni0.6502)
     nickel oxide (Al0.05LiMn0.1Ni0.8502)
                                            193214-57-2P
                                                           193214-58-3P
     193214-60-7P
                    193214-63-0P
                                  193214-64-1P, Aluminum lithium manganese
     nickel oxide (AlO.1LiMnO.1NiO.802)
                                          193214-66-3P
                                                         193214-69-6P
     193214-71-0P
                    193214-73-2P 193214-75-4P, Aluminum lithium manganese
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nickel oxide (Al0.15LiMn0.1Ni0.7502) 193214-77-6P 193214-79-8P 193214-86-7P, Aluminum lithium manganese 193214-80-1P 193214-83-4P nickel oxide (Al0.2LiMn0.1Ni0.702) 193214-88-9P 193214-89-0P 193215-00-8P, Cobalt lithium manganese 193214-91-4P 193214-94-7P nickel oxide (Co0.1LiMn0.2Ni0.702) 193215-03-1P, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.2Ni0.6502) 193215-05-3P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.2Ni0.602) 193215-08-6P, Cobalt lithium manganese nickel oxide (Co0.25LiMn0.2Ni0.5502) 193215-11-1P, Aluminum lithium manganese nickel oxide (Al0.05LiMn0.2Ni0.7502) 193215-14-4P 193215-17-7P 193215-20-2P 193215-23-5P 193215-24-6P, Aluminum lithium manganese nickel oxide (Al0.1LiMn0.2Ni0.702) 193215-25-7P 193215-27-9P 193215-28-0P 193215-30-4P 193215-32-6P, Aluminum lithium manganese nickel oxide (Al0.15LiMn0.2Ni0.6502) 193215-33-7P 193215-34-8P 193215-35-9P 193215-38-2P, Aluminum lithium manganese nickel oxide 193215-36-0P (Al0.2LiMn0.2Ni0.602) 193215-41-7P 193215-44-0P 193215-45-1P 193215-48-4P 193215-50-8P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.3Ni0.602) 193215-51-9P, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.3Ni0.5502) 193215-53-1P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.502) 193215-54-2P, Cobalt lithium manganese nickel oxide (Co0.25LiMn0.3Ni0.4502) 193215-56-4P, Aluminum lithium manganese nickel oxide (Al0.05LiMn0.3Ni0.6502) 193215-58-6P 193215-60-0P 193215-62-2P 193215-64-4P 193215-66-6P, Aluminum lithium manganese nickel oxide (AlO.1LiMnO.3NiO.602) 193215-69-9P 193215-71-3P 193215-73-5P 193215-74-6P 193215-75-7P, Aluminum lithium manganese nickel oxide (Al0.15LiMn0.3Ni0.5502) 193215-77-9P 193215-79**-**1P 193215-82-6P 193215-83-7P 193215-84-8P, Aluminum lithium manganese nickel oxide (Al0.2LiMn0.3Ni0.502) 193215-85-9P 193215-87-1P 193215-88-2P 193215-89-3P 193215-92-8P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.4Ni0.502) 193215-94-0P , Cobalt lithium manganese nickel oxide (Co0.15LiMn0.4Ni0.4502) 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.402) 193215-97-3P, Cobalt lithium manganese nickel oxide (Co0.25LiMn0.4Ni0.3502) 193215-98-4P, Aluminum lithium manganese nickel oxide (Al0.05LiMn0.4Ni0.5502) 193216-00-1P 193216-02-3P 193216-03-4P 193216-05-6P 193216-08-9P, Aluminum lithium manganese nickel oxide (Al0.1LiMn0.4Ni0.502) 193216-10-3P 193216-13-6P 193216-16-9P 193216-18-1P 193216-21-6P, Aluminum lithium manganese nickel oxide (Al0.15LiMn0.4Ni0.4502) 193216-24-9P 193216-26-1P 193216-30-7P 193216-34-1P, Aluminum lithium manganese nickel oxide 193216-32-9P (Al0.2LiMn0.4Ni0.402) 193216-36**-**3P 193216-38-5P 193216-40-9P 193216-42-1P RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation) (cathode active material for secondary lithium battery) ANSWER 133 OF 133 CAPLUS COPYRIGHT 2006 ACS on STN 1996:262255 CAPLUS 124:321550

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L3
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ACCESSION NUMBER:

DOCUMENT NUMBER:

TITLE: Lithium-containing transition metal mixed oxides and

their manufacture and use

INVENTOR(S): Yoshio, Masayuki; Okada, Masaki; Mori, Takashi

Tosoh Corp, Japan PATENT ASSIGNEE(S):

Jpn. Kokai Tokkyo Koho, 9 pp. SOURCE:

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08037007	A2	19960206	JP 1995-58817	19950317
JP 3550783	B2	20040804		
PRIORITY APPLN. INFO.:			JP 1995-58817 A	19950317
			JP 1994-100997	19940516

- AB The oxides are layer structured LixMnyCozNi1-(y+z)O2, where 0.9 <x ≤ 1.2 ; 0.0 < y < 0.5; 0.0 $\leq z < 0.5$; and 0.0 $< (y+z) \leq 0.5$. The oxides are prepared by heat treating compds. of Li and transition metals, where the Mn compound is a Mn3+ compound, preferably γ -MnOOH. The oxides are used for cathodes in Li batteries. ST battery lithium manganese nickel oxide cathode; cobalt lithium manganese nickel oxide cathode IT Cathodes (battery, trivalent manganese compds. in manufacture of cobalt lithium manganese nickel oxides for battery cathodes) ΙT 149887-20-7P, Lithium manganese nickel oxide (LiMn0.1Ni0.902) 163596-49-4P, Lithium manganese nickel oxide (LiMn0.2Ni0.802) 176206-89-6P, Cobalt lithium manganese nickel oxide (Co0.3LiMn0.2Ni0.502) 176206-90-9P, Cobalt lithium manganese nickel oxide (Co0.05Li1.1Mn0.2Ni0.7502) 176304-96-4P, Cobalt lithium manganese nickel oxide ((Co,Mn)0.5Li0.9-1.2Ni0.5-102) RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (trivalent manganese compds. in manufacture of cobalt lithium manganese nickel oxides for battery cathodes) ΙT 1308-06-1, Cobalt oxide (Co304) 1310-65-2, Lithium hydroxide 12025-99-9, Manganese hydroxide oxide (Mn(OH)O) 12054-48-7, Nickel hydroxide
 - RL: PEP (Physical, engineering or chemical process); PROC (Process) (trivalent manganese compds. in manufacture of cobalt lithium manganese nickel oxides for battery cathodes)